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THESIS

THE IMPACT OF TECHNOLOGICAL CHANGE IN ELECTRONIC REPAIRABLES ON THE ACQUISITION PROCESS AT NAVY SHIPS PARTS CONTROL CENTER MECHANICSBURG

by

Roy Allison Hallums, Jr.

March 1981

Thesis Advisor: Alan W. McMasters

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T199168

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Impact of Technological Change in Electronic Repairables on the Acquisition Process at Navy Ships Parts Control Center Mechanicsburg		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis; March 1981 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Roy Allison Hallums, Jr.		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE March 1981 13. NUMBER OF PAGES 139
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Acquisition, Technical Transfer, Technological Change, Military Specifications, Electronic Repairable, Reprocurement, Contracting, Technical Procurement Data

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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process, through SPCC's contracting procedures, to the technical procurement data inputs provided by NAVELEX. Technical data transfer, technological change, and military specifications appear to be the major causes of problems in the SPCC/NAVELEX interface. Several alternatives, such as a Technical Support Agreement, are offered as possible solutions to the problems discussed.

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The Impact of Technological Change in Electronic Repairables on the Acquisition Process at Navy Ships Parts Control Center Mechanicsburg

by

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
March 1981

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I. INTRODUCTION

This thesis is part of a continuing study, conducted at the Naval Postgraduate School and coordinated by Professor Alan M. McMasters, into the interface between the Naval Electronic Systems Command (NAVELEX) and the Navy Ships Parts Control Center Mechanicsburg (SPCC). The area of concentration in this thesis is the acquisition process for 4G items at SPCC and the impact this process has on the item that is finally produced by a contractor, and delivered to the Navy.

A. OBJECTIVES

The objectives of this research effort are:

1. To describe the current acquisition process that involves 4G items and the SPCC/NAVELEX interface in this area.

2. To develop the key issues that should be addressed in attempting to improve the interface.

3. To offer possible alternatives for solution of the issues brought out.

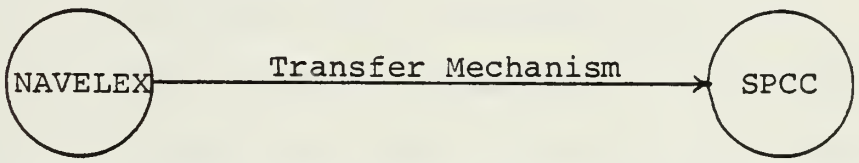
B. TECHNOLOGY TRANSFER

One of the most important aspects of the SPCC/NAVELEX interface is the mechanism by which technical procurement data is transferred during the life cycle of an item.

The virtual revolution in electronics technology every five years is straining the abilities of the current

administrative procedures between NAVELEX and SPCC to keep pace.

In general, the transfer of technology occurs when there is a source, a transfer mechanism of some sort and utilization of the knowledge. In this thesis NAVELEX can be considered as the source, the transfer mechanism is the stock coordination meetings and various informal procedures now in effect, and SPCC can be considered as the organization utilizing the technology [1].



The current transfer mechanism falls short in the following areas:

1. Technical data may not be turned over at stock coordination meetings.

2. There is no formal method by which SPCC is to be notified when to stop buying an old item and start buying a technologically improved item.

3. There is no technical support agreement between NAVELEX, NAVSUP, and SPCC.

4. If NAVELEX determines that a 2Z item has become obsolete, there is currently no formal method set up to notify SPCC to stop carrying the 4G repair parts for the item.

C. METHODOLOGY

The initial literature research revealed many articles and reports that generally applied to the research area but none that addressed it directly. Therefore, general background data on the different management areas concerned (configuration control, technology transfer, small business contracting requirements, etc.) were reviewed. In addition, previous theses covering other areas of the SPCC/NAVELEX interface were reviewed to give a more complete view of the subject.

A one-week fact-finding trip to Mechanicsburg and Washington, D. C. was conducted in September 1980. The trip involved visits and interviews with all major participants in the SPCC/NAVELEX interface. These meetings included personnel from SPCC Code 380 (Technical) and 370 (Contracting), the Naval Electronic Systems Command Detachment Mechanicsburg (NAVELEXDETMECH), the Naval Supply Systems Command (NAVSUP), the Naval Material Command (NAVMAT) and the NAVELEX Headquarters.

As a result of the visit to Mechanicsburg and Washington, numerous instructions, letters and research studies were obtained.

All of the literature mentioned is discussed as either background information or in the discussion of current policy and alternatives. Some of the information is discussed in detail, while others are mentioned only in passing.

Finally, throughout the data analysis and draft preparation of this paper, updating and information phone calls took place

with representatives from the majority of the offices mentioned above.

The literature review included these previous theses, articles from various professional magazines, such as the Defense Management Journal and Contract Management (published by the National Contract Management Association (NCMA). In addition to this, several books on technology transfer and developments in the electronics industry were reviewed.

D. ORGANIZATION OF THE THESIS

Chapter II attempts to outline the current acquisition system and provide a framework for the reader's understanding of the system. Chapter III (Configuration Control) reports on the role configuration control plays in the system and how it attempts to maintain a handle on the ever-expanding area of electronic technology. Chapter IV (Issues) provides the reader with an insight into the varied problems that arise in the current process. It is intended to demonstrate the complex nature of the total interface. Chapter V (Recommendations/Conclusions) presents possible alternatives to improve the current system and offers recommendations that could make the interface more efficient. Also presented in Chapter V are possible areas for further research.

II. THE SPCC/NAVELEX INTERFACE PROCESS

The purpose of this chapter is to present an overview of the current interface between the Navy Ships Parts Control Center (SPCC) Mechanicsburg and the Naval Electronic Systems Command (NAVELEX). Emphasis is placed on reparable electronic spare parts (4G cognizance (COG) items) and the contracting process involved. In order to provide the reader with some background in the area of purchasing and materials management, an outline will be presented of the general objectives and organization found in this area. Then the specific manner in which the SPCC purchasing function operates will be explored.

A. GENERAL OBJECTIVES AND ORGANIZATION OF PURCHASING AND MATERIAL MANAGEMENT

The standard statement of the overall objectives of the purchasing function is that it should obtain the right materials, in the right quantity, for delivery at the right time and right place, from the right source, with the right service, and at the right price. The purchaser must attempt to achieve these several goals simultaneously. The purchasing decision-maker attempts to balance out the often conflicting objectives and makes trade-offs to obtain the optimum mix of these seven goals.

A more specific statement of the overall goals of purchasing would include the following eight items [2]:

1. Provide an uninterrupted flow of materials, supplies, and services required to operate the organization. Stock outs of raw materials and production parts would shut down an operation and be extremely costly in terms of lost production, escalation of operating costs due to fixed costs, and inability to satisfy delivery promises to customers.

2. Keep inventory investment and loss at a minimum. One way to assure an uninterrupted material flow is to keep large inventory stocks. But inventory assets require use of capital which cannot be invested elsewhere. This fact increases the carrying cost of holding large inventories.

3. Maintain adequate quality standards. To produce the desired product a certain quality level is required for each material input; otherwise the end product will not meet expectations or will result in higher than acceptable production costs.

4. Find or develop competent vendors. In the final analysis, the success of the purchasing department depends on its skill in locating or developing vendors, analyzing vendor capabilities, and then selecting the appropriate vendor. Only if the final selection results in vendors who are both responsive and responsible will the item be obtained at the lowest ultimate cost.

5. Standardize, where possible, the item bought. The best item possible, from an overall point of view, for the

intended application should be bought. If purchasing can buy a quantity of one item to do the job that two or three different items previously did, the organization may gain efficiency advantages through a lower initial price resulting from a quantity discount, lower total inventory investment without lowering service levels, reduced costs of personnel training and maintenance costs in the use of equipment, and increased competition among suppliers.

6. Purchase required items and services at lowest ultimate price. The purchase activity in the typical organization consumes the largest share of that organization's dollar resources. While the term "price buyer" has a derogatory connotation, suggesting that the only factor purchasing considers is price, the purchasing department should strive to obtain needed items and services at the lowest-possible price, assuming that the quality, delivery, and service requirements also are satisfied.

7. Achieve harmonious, productive working relationships with other departments within the organization. Purchasing actions cannot be effectively accomplished solely by the efforts of the purchasing department; cooperation with other departments and individuals within the firm is vital to success. For example, the using departments must provide information on material requirements in a timely fashion if purchasing is to have the lead time needed to locate competent

vendors and make advantageous purchase agreements. Engineering must be willing to consider the possible economic advantages of using substitute materials and different vendors. Purchasing must work closely with quality control in determining inspection procedures for incoming materials, in communicating to vendors the changes needed in the event that quality problems are found, and in assisting in the evaluation of the performance of current vendors.

8. Accomplish the purchasing objectives at the lowest possible level of administrative costs. It takes resources to operate the purchasing department: salaries, telephone and postage expense, supplies, travel costs, and accompanying overhead. If purchasing procedures are not efficient, purchasing administrative cost will be excessive. The objectives of purchasing should be achieved as efficiently and economically as possible. This requires that the purchasing manager continually review the operation to assure that it is cost-effective. If the organization is not realizing its purchasing objectives due to inadequate analysis and planning, perhaps additional personnel are needed. But the organization should be continually alert to improvements possible in purchasing methods, procedures and techniques.

1. Purchasing Prerogatives

The purchasing department must have four key prerogatives, if it is to meet the objectives of good purchasing [2]:

a. Right to select the vendor. Purchasing should be the expert in knowing who has the capability to produce needed items and how to analyze vendor reliability. If someone else selects the vendor, purchasing then is in a sole source situation and can do little to bargain for an advantageous purchase agreement.

b. Right to use whichever pricing method is appropriate and to determine the price and terms of the agreement. This is one of the main expertise areas of purchasing; it must have room to maneuver if it is to achieve lowest ultimate price.

c. Right to question the specifications. Purchasing often can suggest substitute or alternate items which will do the same job and it has the responsibility of bringing these items to the attention of the requisitioner. The final decision on accepting a substitute is made by the user.

d. Right to control all contacts with potential vendors. Communication with potential vendors must flow through purchasing. If users contact vendors directly, this encourages "back door changes," in which a potential vendor will influence the specifications so that it will be in a sole source situation. Or the requisitioner will make commitments to vendors which prevent purchasing from arriving at agreements that will give the buying organization the lowest ultimate price. If vendor technical personnel need to talk directly with engineering personnel in the buying organization,

purchasing should arrange for such discussions and monitor their outcome.

2. Steps of the Purchasing System

The Materials management area requires a wide range of standard operating procedures to deal with the normal daily tasks. The large volume of items, the large dollar volume involved, the need for an audit trail, the severe consequences of unsatisfactory performance, and the potential contribution to effective organization operations inherent in the function are five major reasons for developing a sound system. The acquisition process is closely tied to almost all other functions included in an organization and also to the external environment, creating a need for complete information systems [2].

The essential steps of purchasing procedure are as follows:

a. Ascertainment of need.

b. Accurate statement of the character and amount of the article or commodity desired.

c. Selection of possible sources of supply.

d. Analysis of alternatives and the placing of the order.

e. Follow-up on the order.

f. Receipt and inspection of the goods.

g. Checking of the invoice and payment of the supplier.

h. Maintenance of records.

3. Purchasing by Specification

Description of desired material on a basis of specifications constitutes one of the best known of all procurement methods employed. A lot of time and effort has been expended in making it possible for purchasing officers to buy on a specification basis. Closely related to these endeavors is the effort toward standardization of product specifications and reduction in the type and number of the products accepted as standard.

Traditional advantages in buying on specification include [2]:

a. Adequate specifications are evidence that thought and careful study have been given to the need for which the material is intended and to the particular characteristics of the material demanded to satisfy this need.

b. Specifications constitute a standard for measuring and checking materials as supplied, preventing delay and waste that would occur with improper materials.

c. They are of definite value to the large consumer wishing to purchase identical material from a number of different sources of supply, either because no one manufacturer possesses the productive capacity to meet all the buyer's requirements or because the buyer considers it good policy. To ensure identity of materials secured, adequate specifications are almost indispensable.

d. Purchase on a basis of specification tends toward ensuring more equitable competition. This is why governmental agencies place such a premium on specification writing. In securing bids from various suppliers, a buyer must be sure that the suppliers are quoting for exactly the same material or service.

e. When the buyer specifies performance, the seller will be responsible for performance.

While there are certain distinct advantages in buying on specification, using specifications does not constitute a panacea for all difficulties involving quality. The limitations involved in using specifications fall into seven classes [3]:

a. There are many items for which it is practically impossible to draw adequate specifications.

b. Although a saving may sometimes be realized in the long run, the use of specifications adds to the immediate cost. If, therefore, the article desired is one not purchased in large quantities and does not need to conform particularly to any definite standards, it is frequently inadvisable to incur the additional expense. Buyers, when sending specifications for a special item, request the vendor to quote on the basis of the specifications and at the same time to indicate whether or not a standard article closely approaching the one specified is available and, if so, to quote a price on the standard

article, indicating how it differs from the specification submitted.

c. Compared with purchase by brand, the immediate cost is also increased by the necessity of testing to insure that the specifications have been met.

d. One of the difficulties arising from the use of specifications is that they are likely to give the purchase a false sense of security.

e. Extremely elaborate and detailed specifications may defeat their own purpose. Unduly elaborate specifications sometimes discourage possible suppliers from responding to solicitations.

f. Unless specifications are of the performance type, the responsibility for the adaptability of the item to the use intended rests wholly on the buyer.

g. The minimum specifications set up by the buyer are likely to be the maximum furnished by the supplier.

B. DETAILS OF THE SPCC/NAVELEX ACQUISITION INTERFACE FOR 4G ITEMS

The event that normally sets the acquisition process in motion is that SPCC has a requirement to replenish its stock of an item.

This process involves several interactions from the contractor to SPCC Code 370 (Contracting), SPCC Code 380 (Technical), updating of technical procurement data, stock coordination meetings, the SPCC Inventory Manager, the Naval

Electronic Systems Command Detachment Mechanicsburg (NAVELEX-DETMECH) and NAVELEX Headquarters.

Code 370 is the only authorized contact between the contractor and the Navy, after a contract has been awarded by SPCC. The acquisition process outlined will start with this primary interface and work backwards to the NAVELEX Headquarters.

Figure 1 provides a diagram of the SPCC acquisition process.

1. Contract Award

If the contract award is to a company that has produced the item before, SPCC may waive most specifications with the exception of serial number and nomenclature. If a contractor is new, very little may be waived. If a contractor runs into a problem because of an incomplete technical drawing or because the state of the art has changed, he may request a variance or submit an Engineering Change Proposal (ECP) to SPCC. When this occurs, Code 370 goes to Code 380 to determine if the suggested change is authorized. If Code 380 cannot determine this, then the NAVELEXDETACH is contacted.

If the situation involved an ECP II[1], then SPCC may authorize the change without going to the NAVELEXDETACH. If an ECP I[2] is involved, then NAVELEX must authorize the change.

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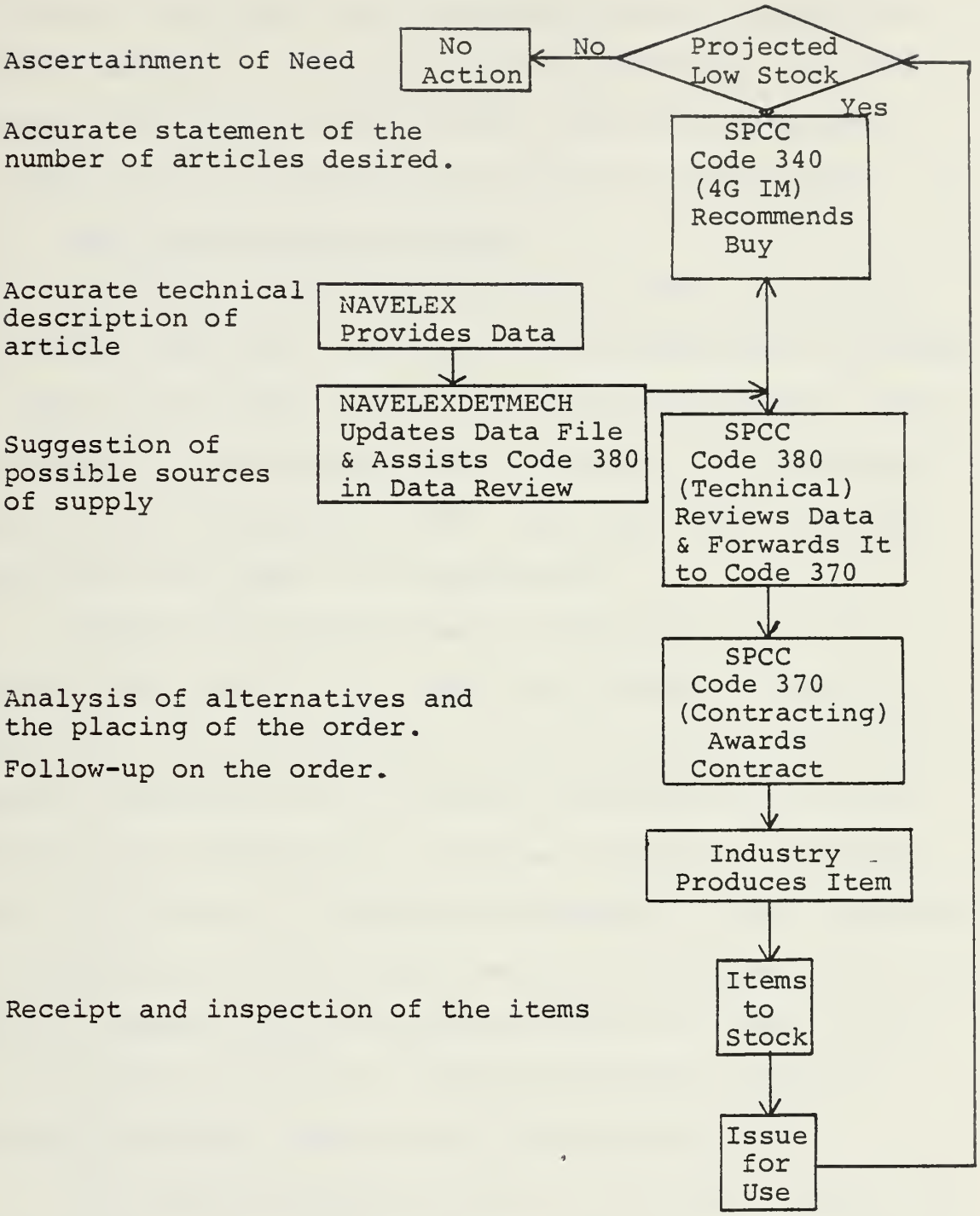
[1]ECP II is defined in detail in chapter III.

[2]ECP I is defined in detail in chapter III.



The SPCC 4G Acquisition Process

Figure 1

Once the contractor has developed an acceptable product, items are shipped in accordance with the contract. In most instances, the bulk of the finished items would be shipped to a supply center to be held as stock for future demands.

2. SPCC Contracting Procedures

After SPCC does accept cognizance (COG) of an item, it is broken down into logical units and competition is sought for each of these items during the contracting process. The requirement to obtain competition is driven by the desires of Congress, the Defense Acquisition Regulation (DAR) and Navy acquisition directives and instructions.

Suppose that NAVELEX has a 2Z COG end item and an internal repair part is 4G. SPCC will attempt to obtain competition if at all possible on any contract for the part. Therefore, NAVELEX or SPCC technical personnel must inform SPCC Code 370 (Contracting) if the part should be purchased from a sole source. If no word is received, it must be assumed that competition is the correct method of purchase. If a sole source is desired, then justification must be given. If it is a competitive situation, recommended sources should be provided by NAVELEX (this is not a hard requirement).

For a small purchase by SPCC, 30 days are assumed for acquisition lead time. A small purchase is considered to be a total dollar amount of less than $10,000. A large purchase is considered to be a dollar amount larger than $10,000.

SPCC normally purchases repair parts by part number, Federal Supply Code for Manufacturers (FSCM) and if there are any modifications to the item that are recommended or required because of technological change, etc., the contractor is required to update the technical manual that is supplied by SPCC. If SPCC awards a contract by part number and FSCM and does not have complete technical specifications, then they are basically purchasing items according to commercial specifications, maintained for configuration purposes by the FSCM.

SPCC awards in the neighborhood of 140,000 contracts per year [3]. Therefore, by necessity SPCC has installed an automated contracting procedure for purchases less than $10,000. As a consequence of this procedure, a 4G item that involves a contract of less than $10,000 may be awarded without any extensive personnel reviews in SPCC Code 370 before it is awarded [4].

NAVELEX Headquarters retains technical cognizance of all material procurred by SPCC to support NAVELEX equipments [5]. Therefore, NAVELEX is responsible for updating technical data at SPCC for the 16,000 4G items SPCC purchases. If items are not updated as changes occur then a considerable delay could be experienced by SPCC in contracts over $10,000. If a contract for less than $10,000 is involved then the contract could be awarded with incorrect data if the data has not been properly updated. However, SPCC could be made aware of the incorrect technical procurement data by the contractor. This

could lead to the necessity of having to go to NAVELEX for updated technical data after a known requirement for the part has been identified, and a contract modification.

SPCC requires a first article test for all purchases of NAVELEX items the first time a company produces an item [6]. A first article test is a specific set of tests run by the government on the first item produced by the contractor to be sure it meets government specifications. Only after this test is completed can full production begin. If a company has previously produced the item then the first article test may be waived.

The SPCC 4G Inventory Manager (IM) is notified via the Supply Demand Review Program of the Uniform Inventory Control Program (UICP) of the need to procure more parts for the inventory. The IM conducts a review to determine if the current environment has changed the stock levels to be recommended. When the UICP programs indicate a technical review is required before contract award, the package is forwarded to SPCC Code 380 (Technical) for review. The IM does not check to see if the item is obsolete before he orders a buy. He depends upon SPCC Code 380 (Technical) to do that [7].

SPCC Code 380 is responsible for review of the technical procurement data aspects of an item before the contracting package is forwarded to Code 370 (Contracting) for actual contracting. Appendix A is an example of the type of information found in the technical procurement data. The technical

data is provided by NAVELEX and inserted in SPCC contracts by Code 380. Code 380 does not have an engineer to review technical data and therefore their review capabilities may be limited in some situations [4]. Code 380 assumes that NAVELEX updates the technical packages for 4G items as required and thus 380 uses the technical procurement data on file to verify a particular item. SPCC handles 16,041 4G items, of which 7651 are active. Active means an item has received at least one demand in the last two years [7]. Therefore, the magnitude of the technical review problems is apparent.

Currently there is no formal method by which NAVELEX notifies SPCC to stop purchasing an old item and to start purchasing a substitute. There is a document on file in the SPCC Vault that is a partial listing of obsolete electronic equipments that should not be purchased. The title of the publication is the Ship Type Electronic Plan Key and Equipment to Sub Category Cross Reference, NAVSHIP-0900-001-2000, dated 1 June 1974. This publication is often called the "Step Key" by those who use it. It is a NAVSEA publication and NAVELEX does not have a separate publication for its own equipment. The SPCC personnel in charge of the Vault have attempted to obtain updated versions of this "Step Key" but they have been informed that, because of funding problems, a new "Step Key" would not be produced [8]. Since the "Step Key" is seven years old and classified portions may not be removed from the

Vault, it is of limited value to Code 380 in the technical review of contract packages.

After the technical procurement package has been approved by SPCC Code 380 or the NAVELEXDETACH, the contract file is forwarded to SPCC Code 370 for contract award. Code 370 assumes that the IM needs the item, that the item is not obsolete, and that the technical procurement package is up to date.

Code 370 uses the SPCC Contract Status File program and the Due-in/Due-out program to keep track of contracts that are in process or have been awarded. Once a procurement request has been prepared, the Contract Status File gives the quantity, where it is in local routing, etc. Once the package goes to contract, the Contract Status File lists when it arrived and when it is due back. The Due-in/Due-out program provides a listing of contractors by FSCM and date items are due for delivery. If items are not received by the delivery date, it gives a delinquent list report [4].

C. TECHNICAL DATA

If an item has been previously purchased by NAVELEX then SPCC assumes the technical re-procurement data received at the time of the stock migration is up-to-date and correct. It is NAVELEX's responsibility at that time to furnish copies of contracts and modifications that might impact upon the SPCC contracting effort. If an item has migrated from 2Z to 4G, but is under procurement at NAVELEX, the contract remains at NAVELEX until it is completed [9].

Technical aspects of SPCC contracts are to be coordinated with NAVELEX as required. SPCC does not approve modifications or proposals made by the contractor for engineering or technical changes. These matters are forwarded to the NAVELEX-DETMECH, or distributed to the appropriate NAVELEX activities, for review and final approval or disapproval. The NAVELEX-DETMECH is responsible for providing all technical assistance to SPCC and coordination of actions requiring inputs from NAVELEX or other activities. This technical assistance is provided in the following areas [9]:

1. Adequacy of technical data package.
2. Quality Assurance (QA) requirements.
3. End article requirements (in the context of the NAVELEXDETMECH/SPCC Instruction, an End Article is the last article delivered under a particular contract).
4. First article and first article testing requirements.
5. First article and producting testing procedure review and approval of disapproval.
6. Development of alternate sources of supply.

D. STOCK COORDINATION

Twice a year NAVELEX and SPCC have stock coordination meetings. Items discussed at these meetings are:

1. Turnover of technical procurement data.
2. NAVELEX personnel with interest in the item.
3. Foreign Military Sales (FMS) Requirements (if any).

4. Current Contractors.

5. Repair history of the item.

6. Utilization data.

7. Refit - repair data.

8. Existing contracts.

All of these items are discussed for every item to be turned over to SPCC for management. A stock coordination meeting was conducted in February 1981. At this meeting 98 items were transferred to SPCC. It is SPCC's responsibility to issue letters of invitation, convene, chair and record the minutes of such conferences. Participation by NAVELEX and other Navy commands concerned with coordination is governed by NAVELEX instructions. Interestingly, personnel from the NAVELEXDETMECH, SPCC Codes 370 and 380 do not attend the stock coordination meetings [6, 10, 11].

When an item is transferred to SPCC, any spare units that are still controlled by NAVELEX are turned over to SPCC. If demand for the item has been low then several units may be turned over. However, if demand has been higher than anticipated then very few units may be turned over. In addition, problems in obtaining funds for spares may prevent NAVELEX from providing sufficient spares to SPCC when an item is transferred.

The first purchase of an item by SPCC will be for what is considered to be a two-year supply [6]. Follow-on

reprocurements for the item will be under the control of the UICP programs. Typically, the time from the original procurement at NAVELEX until the first follow-on reprocurement at SPCC is at least four years.

1. JETDS

One group of 4G electronic items that is of particular interest to SPCC Code 380 and NAVELEX is the Joint Electronic Type Designation System (JETDS). The "item name" combined with the JETDS "type designation" is called the "nomenclature" of an item. JETDS items may be 4G or other COGs. Not all 4G items are JETDS items. There are repairable assemblies that do not fall into the JETDS area [12]. The JETDS nomenclature is controlled by NAVELEX. MIL-E-21981A (NAVY) and MIL-STD-196C are used to identify and control JETDS items. JETDS procedures are mandatory for type designation of all electronic material such as [13]:

a. Radios

b. Radar

c. Data Processing Equipment

d. Flight control and aids to navigation for aircraft, guided missiles, and space vehicles.

e. Weapon control systems

f. Electronic countermeasures equipment

g. Radiac equipment

h. Infrared equipment

i. Meteorological equipment

j. Wire communication equipment (including telephone, telegraph, etc.).

k. Television

l. Underwater sound radiating and non-radiating equipment including those for listening, ranging, sounding, communication, and object location.

JETDS designations may be assigned to material of either commercial or military design, which are grouped for a military purpose. JETDS item names used with type designation assignments must be consistent with the policies of the Federal Cataloging Program.

SPCC currently handles 14,000 JETDS items for NAVELEX [6]. Many of the drawings of JETDS items held by SPCC are not complete and this can cause problems at the time of technical review or contract award [7]. The problem of incomplete drawings in many cases is due to the fact that the Navy has never purchased the drawings from the contractor [14].

E. NAVELEXDETMECH

If SPCC Code 380 does not feel technically qualified to review an item or if problems have developed with the technical package for the item during the contracting process, the NAVELEXDETMECH is called upon to review the package and if possible, provide the correct data to SPCC. If the correct data is not available then the NAVELEXDETMECH contacts the cognizant engineer in NAVELEX to get the required data. This process involves only about ten percent of the 4G items at SPCC [9].

The document that specifies the responsibilities of SPCC and the NAVELEXDETMECH is the Joint SPCC/NAVELEXDETMECH Internal Instruction 4355.8. The instruction primarily points out that the purpose of the NAVELEXDETMECH is to provide Quality Assurance (QA) and technical guidance to SPCC in support of NAVELEX material.

The instruction delineates the responsibilities of each organization as follows:

NAVELEXDETMECH:

1. Provide SPCC with timely replies to requests for technical and QA assistance not within SPCC's scope of technical authority.
2. Coordinate all Class 1[3] changes, deviations and waivers with NAVELEX (4604) and furnish SPCC an appropriate reply within 20 days.
3. Provide SPCC technical data packages or submit data which will support limiting the procurement to a sole source.
4. Provide SPCC with missing technical or QA information.
5. Provide First Article Approval test site.
6. Approve/disapprove technical proposals submitted by contractors.
7. Provide SPCC technical or QA requirements necessary to change, augment, or update the SPCC technical files.
8. Provide SPCC, within 75 calendar days or receipt, an annotated copy of the Project Buy List (PBL)[4] indicating appropriate PBL advice codes on each item listed.

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[3]Class 1 (ECP I) changes are defined in detail in chapter III.

[4]PBL is another product of UICP which produces a list of stock numbers which have a probability of being needed in a coming period due to activity demands.

SPCC:

1. Exercise Class II[5] approval authority as defined in MIL-STD-480.

2. Forward all technical and quality assurance matters pertaining to any contractual problem in the Class I area to the NAVELEXDETMECH.

3. Forward technical problems that require engineering decisions which are beyond the SPCC approved functions to the NAVELEXDETMECH.

4. Cite SPCC Contract Clause F2 or F17 as applicable in all contracts and purchase orders for Configuration Control. Cite the latest drawing revision on file at SPCC.

5. Provide NAVELEXDETMECH with a copy of all contracts and purchase orders awarded for NAVELEX cognizance material.

6. The SPCC PBL, a NIIN sequenced listing of purchase actions to be processed three months from the PBL date, will be forwarded to NAVELEXDETMECH for screening and appropriate reply.

Part of the QA process at the NAVELEXDETMECH involves review of contracts that have previously been awarded by SPCC. SPCC is supposed to forward all contracts involving 4G items to the NAVELECDETMECH. The Detachment QA section places the 4G contracts in a queue as they arrive. Then as time permits, the contracts are scanned to determine if any obvious technical data problems are present. From the time of arrival until the time of review may be up to six months for an individual contract. If technical data problems are noted,

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[5]Class II changes are defined in detail in Chapter III.

the contract is forwarded to the technical section of the Detachment, where it is placed in another queue to await more detailed review. This second review is also conducted on an "as time permits" basis and may involve up to six months wait. If a discrepancy is found during this review, a modification to the contract may be required and the NAVELEXDETMECH notifies SPCC by letter. It is estimated that SPCC issues almost 1500-2000 contract modifications per year due to this review process [11]. By way of putting this in perspective it should be noted that SPCC issues about 20,000 contract modifications per year over all COGs. Because of manpower limitations, the NAVELECDETMECH does not review most contracts awarded by SPCC until after award.

F. NAVELEX PROCEDURES

NAVELEX is a Hardware Systems Command (HSC) and as such is responsible for the development, planning, programming, acquisition, installation, logistics, technical support and guidance for particular classes of weapons systems and their related equipments required in support of all facets of naval operations throughout the systems/equipment life cycle [15]. NAVELEX manages temporary parts inventories during the design and development of new Navy electronics material or hardware. As systems, individual equipments, and parts mature, NAVELEX is required to transfer responsibility for the item to an Inventory Control Point (ICP) [15]. In this thesis the ICP

being considered is SPCC. There are four criteria that NAVELEX might use to justify maintaining control of inventories for a particular item [15]:

1. Items in a Research and Development State. Items qualifying under this category must be under development and not yet in fleet operational use.

2. Items Requiring Engineering Control Decision. This criterion is applicable when a high degree of engineering judgement is required concerning design or relationships to a system. It pertains principally to those items requiring engineering decisions during production or prior to each issue. Items that remain in this category after two (2) years of operational use must be justified in the same manner as Criteria Code Four (4) items of this instruction.

3. Items Unstable in Design. Items which are determined by an engineering decision to be highly subject to design change of the item itself or replacement of the item through modification of its next higher assembly. End items, components, assemblies, test and evaluation equipment unstable in design do not exclude their intrinsic parts from stock coordination review. Items retained for management under this category will be transferred to an ICP after completion of two (2) years operational use unless a major design change or modification has been approved and/or is being accomplished at the time of the Stock Coordination Review. Further retention upon completion of the approved design change or modification must be justified in accordance with Criteria Code Four (4).

4. Items Expressly Assigned to a Single Command Management by Separate Authorizing NAVMAT Directive. Items qualifying for this category are limited to items of major imporatance and depot level reparables. Inclusion in this category is a matter for CNM decision based upon justifying rationale submitted by the originating command. As a general rule, items changed from Criteria Codes (2) and (3) into this code will be transferred to an ICP for inventory management even though the procurement function remains at the headquarters level. Items assigned under this criterion will be considered as an adjunct to stock coordination and therefore, are not precluded from formal review when scheduled.

Those items within the NAVELEX inventory are designated 2Z COG material. Normally, NAVELEX considers these 2Z items as 100 percent program related. In other words, the items are designed for a particular end user [16]. NAVELEX inventory managers handle approximately 100 items each and tend to do so on a manual basis with computerized assistance from the Requirements Accumulator/Acquisition Tracking System (RACC/ATS). In contrast, the average 4G COG electronics inventory manager at SPCC manages approximately 1000 active 4G and 1H items; "active" means the item has received at least one demand in the last two years. Therefore, the inventory manager may have more than 1000 4G and 1H items on his books but they do not all require the same supervision [7]. The SPCC inventory manager is assisted by the SPCC UICP programs in his management function.

1. RACC/ATS

The Requirements Accumulative/Acquisition Tracking System (RACC/ATS) system utilized by the NAVELEX Inventory Manager is a module of the NAVELEX Command Management Information System. It is supported by a central computer located at SPCC, with on-line remote terminal devices and a tape-to-tape printer located at NAVELEX. The objective of RACC/ATS is to provide an automated real-time system which will satisfy the information needs of different management levels while they are performing their various functions during the acquisition cycle. Requirements placed in the RACC/ATS system

each day are screened against availability from sources other than procurement. If a source other than procurement for filling the requirement is found, a recommended action such as the following will be produced:

a. Notification of availability from repairable carcasses for restoration scheduling.

b. Notification to exercise an option under an existing contract.

c. Notification to include the requirements under a multi-year contract. Upon receipt of such a notification, the manager must take action to update the system as appropriate.

If there is no existing source for filling the requirement, the RACC/ATS generates either a worksheet to be used for procuring the item from another agency/service or a set of schedules based on Required Delivery Date (RDD), Manufacturing Lead Time (MLT) and Procurement Lead Time (PLT). These schedules are prepared for four basic types of procurements, i.e., formally advertised, 2-Step, negotiated under $100,000 and negotiated over $100.000. The schedules are then routed to the inventory manager for review and identification of proper funding. The inventory manager does not make the final decision on what contract type will be used. The schedules are next forwarded to NAVELEX Code 02 (Contracting) for final selection of a procurement method based upon adequacy of a technical package, time required to prepare

a technical package, or other controlling factors. Once a contracting method has been selected, the appropriate schedule is established in the RACC/ATS and the ATS monitoring programs are the basis for producing "alerts," procurement status, and missed milestones reports.

The Equipment Dictionary (EDICT) is the method of adding an equipment model to the SPCC Master Files. In order for a requirement to be added to the RACC/ATS system, it must be pre-established in the EDICT under a National Stock Number (NSN) or an Activity Control Number (ACN). A unique ACN is assigned if an NSN does not exist for the item [17].

The NAVELEX/NAVSUP Program Support Agreement of 18 May 1979 states that NAVELEX will provide all program data for NAVELEX programs to SPCC via the RACC/ATS system or NAVELEX Form 4406/3 (Program Support Data Sheet). SPCC is to use this program data as the primary tool for budgeting, procurement and disposal determinations for SPCC managed items required to support NAVELEX equipments.

A project is currently under way to upgrade the RACC/ATS system so it will be more responsive to NAVELEX requirements. The follow-on system is currently called the NAVELEX Acquisition Management Information System (NAMIS) and is scheduled for completion in about 18 months. Details of the new system will be discussed later in this thesis.

G. SUMMARY

As stated previously, this chapter is intended as an overview of the acquisition process involving spare parts that SPCC purchases in support of NAVELEX equipment. Some simplifications were made in the presentation and the chapter is not intended to be a daily account of how actual operations may occur. It is more or less an account of official procedures that are presented in various instructions as to how the system is supposed to work. Because of internal changes or necessity it is realized that the various aspects of this process will receive differing emphasis depending on the acquisition environment.

III. CONFIGURATION CONTROL

Configuration control is the formalized process by which technological change is recorded and controlled in the SPCC/NAVELEX interface. When military specifications are used, configuration control procedures must be utilized in order for proper electrical and mechanical interfaces to be maintained. It is of particular importance to this thesis because it has such a large impact on the technical procurement data.

A. GENERAL OVERVIEW

Configuration control is the process of change management. This management begins with the establishment of the functional base line and continues throughout the life of the item. It requires the participation of areas such as engineering, logistics, and technical data management. Configuration control involves the systematic evaluation, coordination, and approval or disapproval of proposed changes to the design and construction of an item whose configuration has been formally approved [1].

The overall objective of configuration control is to guarantee that a given item is what is is intended to be, as defined by contractual drawings and specifications. It is also intended to identify the configuration to the lowest level of assembly required to assure performance, quality, and reliability in future products of the same type. The five major goals of configuration control are [1]:

1. Definition of all documentation required for product fabrication and test.

2. Correct and complete descriptions of the approved configuration. (Descriptions include drawings, parts lists, specifications, test procedures, and operating manuals.)

3. Traceability of the resultant product and its parts to their descriptions.

4. Accurate and complete identification of each material, part, subassembly, and assembly that goes into the product.

5. Accurate and complete pre-evaluation control and accounting of all changes to product descriptions and to the product itself.

Figure 2 is a diagram of how configuration management interfaces with other management areas [18].

Formalized configuration control techniques for government purchased products offer the only system available for guaranteeing that detailed contract and product requirements are met.

B. CONFIGURATION CONTROL IN SPCC CONTRACTS

Configuration control commences when a contractor is awarded a contract by SPCC for the 4G items SPCC is reprocuring. The configuration control statement in each contract provides that the contractors must maintain a specific degree of control during the execution of the contract. Examples of some of the contract clauses used by SPCC in configuration control are contained in Appendix B.

There are several configuration control clauses used in contracts by SPCC. Of the clauses available, F-2 and F-17

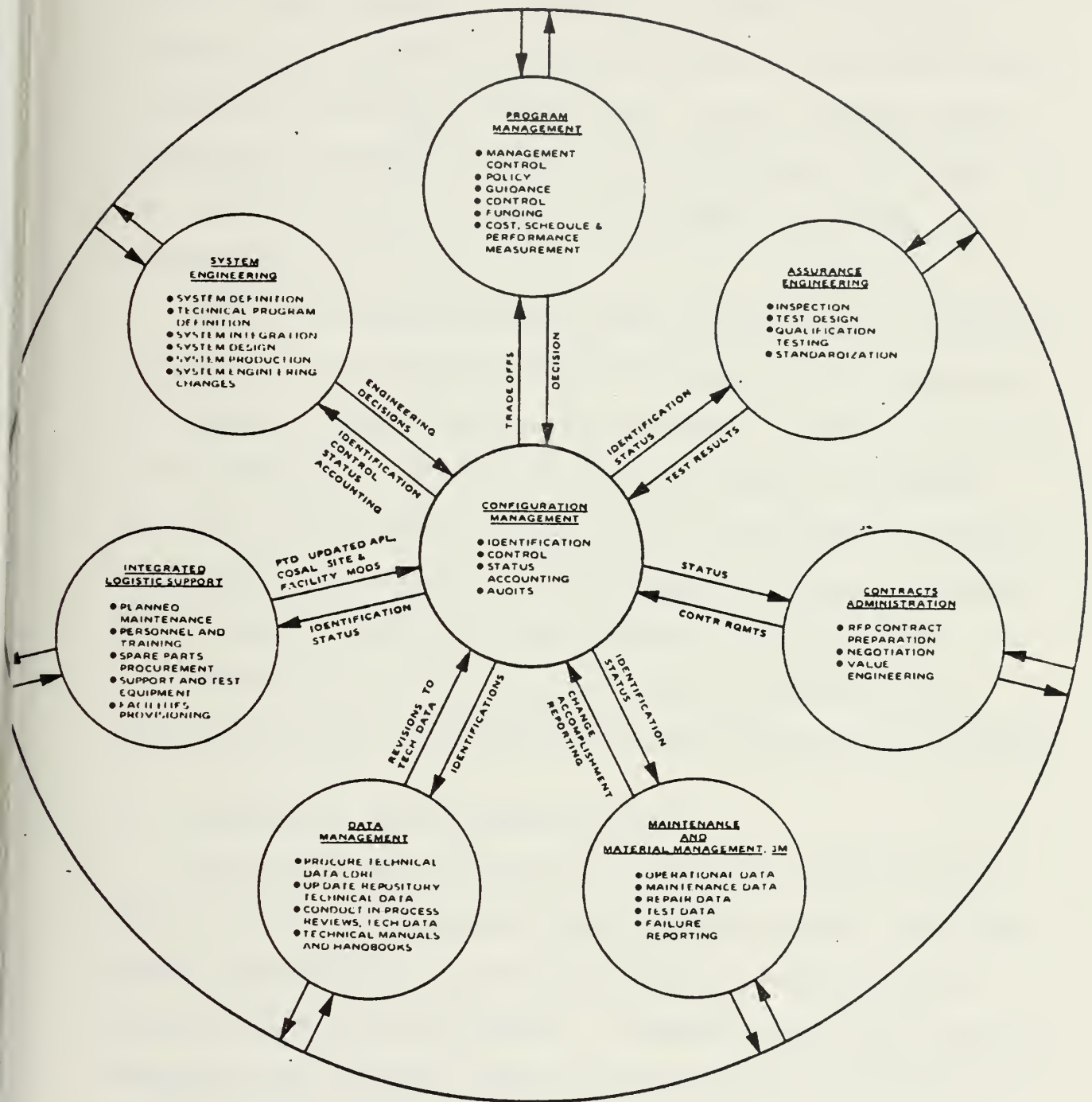


Figure 2 · Configuration Management Interface with other Management Systems

are used with 4G items. Clause F-2 requires that ECP-I and ECP-II changes be returned to SPCC for decision, and for ECP-I further routing to NAVELEX. Clause F-17 delegates authority for approval of ECP-II changes to the local Administrative Contracting Officer (ACO), ECP-I changes must be forwarded to NAGELEX via SPCC. In most cases, the local ACO is a Defense Contract Administration Service (DCAS) representative.

DCAS is the major Defense agency established to perform a variety of field contract administration functions for all Department of Defense procuring agencies. Organized in 1965, DCAS grew from a consolidation of the numerous separate service organizations through a major realignment of responsibilities, and activity relationships. DCAS now provides uniform administration of all assigned contracts [19].

Clauses F-8 and F-15 are provided in Appendix B as examples of other configuration control clauses used by SPCC.

C. ENGINEERING CHANGE PROPOSAL (ECP)

The vehicle that is used to account for configuration changes is the Engineering Change Proposal (ECP). For many years, engineering changes to government contracts were handled in an informal manner. However, with the increasing complexity of hardware, this method of change implementation became unworkable. Currently, MIL-STD-480 governs the use of ECP's and provides the following definitions for an ECP I or ECP II:

ECP-I:

An engineering change shall be classified Class I when one or more of the factors listed below...is affected:

(a) The functional or allocated configuration identification.

(b) The product configuration identification as contractually specified (or as applied to Government activities), excluding referenced drawings.

(c) Technical requirements below contained in the product configuration identification, including referenced drawings, as contractually specified (or as applied to Government activities).

(1) Performance outside stated tolerance.

(2) Reliability, maintainability or survivability outside stated tolerance.

(3) Weight, balance, moment of inertia.

(4) Interface characteristics.

(d) Non-technocal contractual provisions.

(1) Fee

(2) Incentives

(3) Cost

(4) Schedules

(5) Guarantees or deliveries

(e) Other factors

(1) Government furnished equipment (GFE)

(2) Safety

(3) Electromagnetic characteristics

(4) Operational, test or maintenance computer programs.

(5) Compatibility with support equipment, trainers or training devices/equipment.

(6) Configuration to the extent that retrofit action would be taken.

(7) Delivered operation and maintenance manuals for which adequate change/revision funding is not on existing contracts.

(8) Pre-set adjustments or scheduled affecting operating limits or performance to such extent as to require assignment of a new identification number.

(9) Interchangeability, substitutability or replaceability, as applied to CI's, excluding the pieces and parts of non-reparable subassemblies.

(10) Sources of CI's or reparable items at any level defined by source control drawings.

ECP-II:

An engineering change shall be classified Class II when it does not fall within the definition of a Class I engineering change. Examples of a Class II engineering change are:

(a) a change in documentation only (e.g., correction of errors, addition of clarifying notes or views).

(b) a change in hardware (e.g., substitution of an alternative material) which does not affect any factor listed under ECP I).

As pointed out in Chapter II, SPCC has been delegated authority only to approve ECP II requests. When a contractor submits an ECP II to SPCC, it is received by Code 370. Code 370 will normally forward the ECP to Code 380 for approval. If Code 380 has a question concerning the ECP, it is forwarded to the NAVELEXDETMECH for decision.

An ECP I also follows the Code 380, Code 370, NAVELEX-DETMECH route but it must be routed to NAVELEX for final decision. At NAVELEX, the Configuration Control Board for the item considers the ECP.

D. CHANGES THAT OCCUR OUTSIDE THE CONFIGURATION CONTROL SYSTEM

If for any reason a technical change is made to an item and this change is not recorded then the degradation of the technical procurement data held by SPCC could begin. This bypassing of the normal configuration control process could occur in the following way:

1. The contractor could change an internal piece of a 4G item and not notify SPCC.

2. A contractor verbally requests that a "small" change (a change so small the contractor feels it does not qualify as an ECP-I or ECP-II) be authorized by SPCC and the change is approved with no documentation. Because there would be no record of the change, the modification may not be noted until the item is in operation or is being repaired.

3. The contractor might make direct contact with a COG engineer in NAVELEX and make a recommendation for a change. If the engineer orally tells the contractor to go ahead with the change then additional problems may develop.

a. The change may not be entered into the configuration control process so the integrity of the data at SPCC is lost.

b. Since the engineer is not the contracting officer, he is not authorized any kind of change or modification control over the contract. Therefore, in the future if the contractor requests an increased amount of dollars for the changes "authorized" by the engineer, problems may develop.

c. If an item does not pass QA tests or first article tests because of changes the COG engineer authorized without contacting SPCC, a dispute could arise that would result in delayed delivery of the item required.

E. EXAMPLE OF CONFIGURATION CONTROL AT SPCC AND NAVELEX

As was previously noted, when major changes such as an ECP I are made to an item, NAVELEX will usually change the last letter designation on the item. For example, an AN/SPC-55B would become an AN/SPG-55C if it were modified. The AN/SPC-55C could be a replacement for the AN/SPG-55B, making the B model obsolete. Another possibility is that the AN/SPG-55C may not replace the AN/SPG-55B in all cases and therefore both items would be retained in stock.

SPCC would control configuration of the AN/SPG-55 by assigning different NSN's to the different models. This would mean that each model would have its own Allowance Parts List (APL). If the B model did become obsolete and SPCC was not notified of this, the item could be retained in stock and add to the items at SPCC that do not turn over. Since there is currently no formal method for SPCC to be notified when an item has become obsolete, there is no way to determine how long the B model might remain on SPCC records.

F. SUMMARY

This chapter has discussed configuration control and its influence on the SPCC/NAVELEX interface. If military

specifications are used, then the configuration control system must be used properly. Without this proper utilization, the technical data used in procurements at SPCC may be incorrect. Since SPCC Code 380 assumes the technical procurement data it retains on file in its office is correct and suitable for a re-procurement action, this incorrect data can cause contract delays and cost overruns.

If configuration control is to be an effective management system to control the evolution of 4G items then both NAVELEX and SPCC must make every effort to insure the system's integrity. Deviations from standard configuration control procedures will only frustrate both commands in their attempts to obtain standardized equipments. A lack of adherence to basic configuration control practices by either command may result in decreased support for equipments in the fleet.

IV. ISSUES

In this chapter, some overall issues that need cooperation between NAVELEX and SPCC for resolution will be discussed. First some basic questions concerning the interface are reviewed and then other areas of general concern will be considered.

A. HOW IS SPCC NOTIFIED WHEN TECHNOLOGICAL CHANGE HAS OCCURRED IN A 4G ITEM?

SPCC may be notified of a technological change in several ways, some of these involve technical data updating before or after contract award.

Updating of technical procurement data by NAVELEX/NAVELEC-DETMECH before contract award is the desired method. It is NAVELEX's responsibility to update the technical procurement data held by SPCC as technological change occurs. Of course, these changes could occur at any time during the item's life so there has been no specific schedule established as to when a particular item should be updated. As a result, there is no method that SPCC may use to determine if an item should have been technically updated by NAVELEX.

NAVELEXDETMECH review of technical data after contract award is another means by which SPCC is notified of technological change. If, during this review, it is noted that the technical data is obsolete or incorrect, the NAVELEXDETMECH will notify SPCC by letter that the specific contract

concerned has incorrect data. SPCC will then attempt to modify the contract and incorporate the correct or updated technical data into the contract.

A third way SPCC may be notified of technological change is if after contract award contractors notify SPCC that the technical procurement data is incorrect. This could mean that the data is incomplete or that the data is out of date and the item described could not be produced or only produced at a very high cost. When this occurs SPCC's only alternative is to take the technical data package to the NAVELEXDETMECH and request clarification of the situation.

Of the three methods presented only one provides for an active, before-contract updating of technical data. That is, of course, the continual updating process that is to be performed by NAVELEX/NAVELEXDETMECH. The other two methods are basically after-the-fact procedures that can lead to delays in delivery and increased cost to the government because of contract modifications.

B. HOW IS TECHNICAL PROCUREMENT DATA TRANSFERRED FROM NAVELEX TO SPCC?

Twice each year, stock coordination meetings are held between NAVELEX and SPCC. At these meetings the proposed items for transfer are discussed. A coordination meeting was conducted in February 1981 at which 98 items were transferred.

The following topics are discussed at these meetings for each item considered [20]:

1. NAVELEX personnel to contact if problems arise with the item.
2. Foreign Military Sales (FMS) requirements.
3. Technical procurement data.
4. Current contractors producing the item.
5. Outstanding contracts for the item.
6. Retrofit and repair data.
7. Repair history of the item.
8. Utilization data.

As was pointed out in chapter II, the technical data for an item is not always turned over to SPCC during the stock coordination meeting. If SPCC must contract for the item before the technical procurement data is received then the contract would be by NSN or part number. In this instance, SPCC would probably go to a company that has manufactured the part before with the NSN or part number. But, since SPCC would have no standard by which to measure the finished product, the result would be that this item will be produced according to de facto commercial specifications. That is, the manufacturer could substitute or replace parts within the 4G item and SPCC would have no means to determine if this substitution should or should not have taken place.

C. IS IT NECESSARY TO OBTAIN COMPLETE TECHNICAL DATA FOR ALL 4G ITEMS SPCC STOCKS?

Some SPCC and NAVELEX personnel interviewed during the research phase of this thesis suggested that the problem of a lack of technical data could be solved by purchasing all technical data available for every NAVELEX item that migrates to SPCC. In this way it was felt that SPCC could be assured of having sufficient data to award a contract competitively. However, this idea has some difficulties that will be discussed below.

The NAVELEX position might be that if data is purchased at the time of initial procurement at NAVELEX, the data would be out of date four years later when a reprocurement is undertaken by SPCC. Therefore, the drawing would have to be updated continuously from the time of initial purchase until SPCC awards a reprocurement contract. When one considers that SPCC handles 16,041 4G items and 7,651 of these items are active, it would appear to be an inefficient use of manpower to update data for 8,390 items that will probably not be reprocured. If, on the other hand, commercial specifications were used, the delays in SPCC PLT due to technical review at NAVELEX would be eliminated and NAVELEX would have the state-of-the-art equipment it desires.

The DAR provides some direct guidance relative to the acquisition of technical data, limiting the amount procured, and the competitive procurement policy.

DAR 9-202.1 states:

> In balancing the Government's requirement for technical data against the contractor's interest in protecting his data, it should be recognized that there may be a considerable identity of interest. This is particularly true in the case of innovative contractors who can best be encouraged to develop at private expense items of military usefulness where their rights in such items are scrupulously protected. It is equally important that the Government foster successful contractual relationships and encourage a ready flow of data essential to Government needs by confining its acquisition of technical data to actual needs... Acquiring, maintaining, storing, retrieving and distributing technical data in vast quantities generated by modern technology is costly and burdensome for the Government. For this reason alone, it would be necessary to control closely the extent and nature of data procurement.

Even when technical data is purchased, it must be kept in mind that manufacturers are hardware oriented rather than paper or documentation oriented. Therefore, manufacturers usually provide existing drawings to the Navy. These drawings are normally drawn to industry standards and may not show "shop practices" or processes. It is often difficult in a Quality Assurance (QA) review to determine if a detail drawing provides the minimumly acceptable data for production, and it may be even more difficult to determine if the drawing provides sufficient detail to support competitive procurement.

One reason some companies are reluctant to submit complete technical data to the Navy is that they fear that under the Freedom of Information Act (FOIA) their "limited rights" data would be provided to competitors.

DOD Directive 5400.7 of 14 Feb 75 states in Section V.B.4:

> Formulae, designs, drawings, research data, computer programs, technical data packages, and so forth, are not considered "records" within the Congressional intent of 5 U.S.C. 522, as amended by P. L. - 502. Because of development costs, utilization, or value, these items are considered exploitable resources to be utilized in the best interest of all the public and not preserved for informational value nor as evidence of agency functions. Requests for copies of such material shall be evaluated in accordance with policies expressly directed to the appropriate dissemination or use of these resources.

The Chief of Naval Operations (CNO) by letter of 10 December 1979 Ser 09/101456 issued a policy statement that certain engineering drawings and technical manuals would not be considered "records" subject to release under the FOIA. There does exist the possibility that "limited rights" data could be released if in the opinion of the Navy release of the data did not cause "substantial" competitive injury to the owner or submitter of the data. However, there is little evidence that Navy personnel at procuring activities have released "limited rights" technical data because of requests pursuant to FOIA [14].

Suitability for reprocurement is a key factor of technical data which the Government attempts to buy. Therefore, the Government's review process needs to make sure that the level of detail represented in the engineering drawings is satisfactory for reprocurement purposes. Unfortunately, there are insufficient personnel resources to accomplish adequate review in many cases [14].

D. ARE COMMERCIAL SPECIFICATIONS A VIABLE ALTERNATIVE TO MILITARY SPECIFICATION FOR 4G ITEMS?

One of the major areas of concern in the interface between NAVELEX and SPCC is the updating of specifications. On the one hand SPCC would like to have complete engineering drawings of every item it supports for NAVELEX. This would allow SPCC to seek and obtain competition in its contracting process and, if these drawings were held by SPCC, there would be no delay that would add to the PLT. However, as previously pointed out, it does not seem cost-effective to purchase complete technical data on every item stocked.

Recently, NAVMAT (MAT-0432-Programs) conducted a test of commercial electronic items to determine what failure rates could be expected from "off-the-shelf" commercial products. The review consisted of testing and visual screening of Class 5962 and 5961 semiconductors (transistors, diodes, microelectronic integrated circuits (IC), etc.). For the 5962 Class items, all parametric tests were allowed a 10 percent variance from maximum and minimum values before being designated a failure. In all, there were 911 electrically functional devices tested and a 1.6 percent failure rate. In the 5961 Class, 1141 items were tested. Of these items tested, 1076 were found to be electrically functional devices for a 5.7 percent failure rate. However, in this class one diode and two transistors showed a large amount of marginal failures. It was recommended that the marginal

items undergo further testing to determine if they should be counted as actual failures. If these three items were excluded from the test then a 1.6 percent failure rate was found in this area also.

The study stated that a one percent return or failure rate is considered normal for standard product line stocked devices. Therefore, it would appear that going to commercial specifications, including attendant testing criteria, is worthy of further consideration. The area that must be reviewed closely is the degree to which known methods and processes for achieving high reliability may be bypassed in the pressures of production [14].

E. TECHNOLOGICAL CHANGE

The pace at which technological change occurs in the electronics industry offers the possibility for increased equipment performance and increased problems for engineering and contracting personnel. The problem appears to have shifted from how to obtain the basic technology to manufacture an item to one of how to manage the technology itself. This pressure of technological change can be seen in the relationship between NAVELEX and SPCC.

Another question that must be faced is how long the technology selected will remain available and supportable. The electronics market is essentially geared to commercial demand, and NAVELEX or SPCC have had problems with items that

have been discontinued, either because of a new, improved model or because the technology chosen was not a commercial success or was so unique that it was dropped by the contractor after the initial production.

A manufacturer that discontinues production of electronic items that are required in the manufacture of the overall "end item" can be a real problem. In cases such as this there may be no alternative but to redesign the affected portions of the system.

As technology advances, so does the need for increased reliability. This increased reliability is so complex the serviceman in the field cannot be legitimately expected to service and repair an item. In some cases, repair is not possible (as with a crushed electronic chip). Even where repair is possible, it may not be cost effective.

F. DIFFERENT PERSPECTIVES

In interviews with numerous individuals at NAVELEX and SPCC there appeared to be two general and differing views of how the acquisition process should function. The NAVELEX view was that the acquisition process should take as long as necessary to insure the best and most up-to-date item could be procured. The SPCC view was that the primary goal of the acquisition process should be to obtain a workable item as soon as possible and get it out to the fleet. In the SPCC view, future improvements could be incorporated in a follow-on contract if required. These differing views tend

to have an overall impact upon other problems and should be kept in mind while proceeding through the rest of this chapter.

Part of the difference in perception between the two commands may be due to the background of the organizations. SPCC was developed as a Hull, Mechanical and Electrical (HM&E) support activity. This function involved contracting for and maintaining an inventory of parts that were generally less engineeringly advanced than the electronic equipment produced by NAVELEX.

As an HSC, NAVELEX is interested in developing engineeringly sound and efficient equipment. In the past, NAVELEX dealt with the Electronics Supply Office (ESO) in maintaining repair parts for these advanced electronic items. Since 1973, when ESO was incorporated into SPCC, adjustments have been required in SPCC procedures to deal with the new level of engineering. Some problems in the interface process between SPCC and NAVELEX could be viewed as normal growing pains one might expect in the merging ot two large organizations such as SPCC and ESO.

G. DIFFERENT EVALUATION CRITERIA

NAVELEX and SPCC are evaluated according to different criteria. NAVELEX is evaluated by NAVMAT and the Fleet on how well the equipment developed meets the threat and how reliable and maintainable the item is, and all of this must

be accomplished within budgetary constraints. The electronic design of equipment is also important to NAVELEX.

SPCC is evaluated by NAVMAT and the Fleet on how long it takes to obtain the parts required to support operational units. In addition, SPCC is evaluated by the General Accounting Office (GAO), Naval Supply System Command (NAVSUP) and the Naval Audit Service (NAS) by the amount of competition sought on contracts, small business contract awards and how well the Defense Acquisition Regulation (DAR) is followed. If items are to be issued to operational units in a timely manner, SPCC must insure that it remains within the established Procurement Lead Time (PLT). Delays in PLT cause delays in delivery and this presents a negative image of SPCC to NAVSUP, NAVMAT, and the Fleet.

As a consequence of their different evaluation criteria, it would be natural for each to be primarily concerned with the actions they must take while the item is under their control.

H. CONTRACTING REQUIREMENTS

When NAVELEX presents technical procurement documentation to SPCC, the SPCC contracting section may find the NAVELEX request (i.e., sole source) incompatible with other requirements that the contracting office is required to follow. NAVELEX's actions in an instance like this would probably be inadvertent, due to a lack of understanding of SPCC contracting procedures. As the procuring activity,

SPCC's actions are governed by overall DOD policy as outlined in DAR 1-300.1; "All procurement whether by formal advertising or by negotiations, shall be made on a competitive basis to the maximum practicable extent." Emphasis on competition is further influenced by the following:

1. Requirements in DAR 3-101(d) to justify sole source negotiations and take positive actions to minimize the necessity for sole source negotiations for the item in the future.

2. The reiteration of DAR 1-300.1 in most procurement directives.

3. Congressional pressure, as characterized by the House Appropriations Committee Survey and Investigation Staff investigation and the Report of the Committee on Appropriations of September 20, 1979.

4. The fact that procurement activities must report the percentage of competitive procurements versus non-competitive procurements.

The result is that every effort is made to competitively procure an item even though the data package may not be adequate for this purpose. As a consequence, data may be used to support competitive procurements even though the level of detail in the data is only adequate to support procurement from the original manufacturer.

1. Small and Disadvantage Business Objectives

The Navy is committed to a goal of supporting the small and disadvantaged business communities. In major

acquisitions the Navy requires that prime contractors establish small and disadvantaged business goals and report on attainment of these goals.

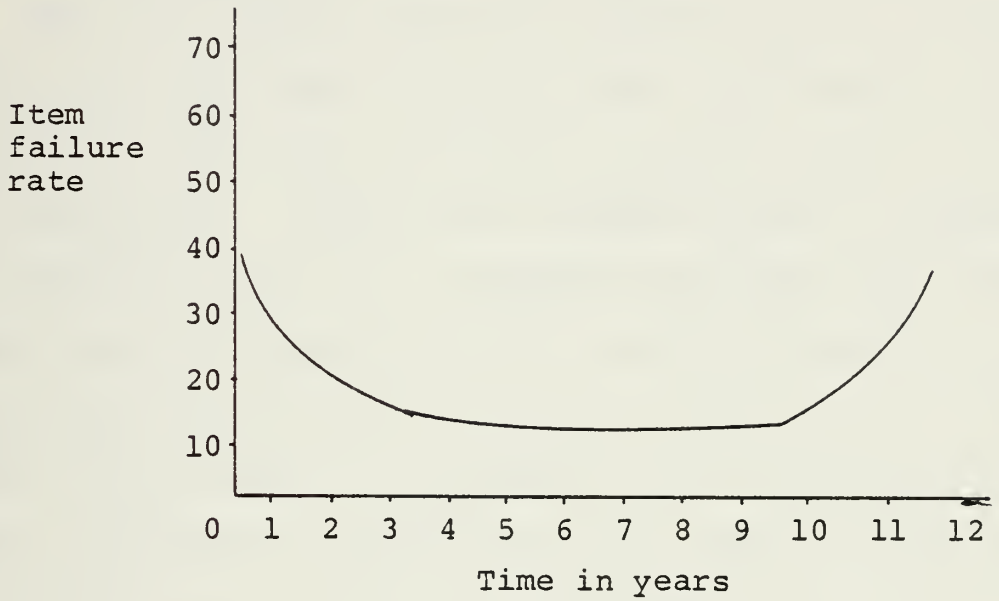
The relatively new PL 95-507 has "reserved" for small and disadvantaged business all contracts less than $10,000 unless the contracting officer determines there is no reasonable expectation that offers will be obtained from two or more small business concerns that are competitive with market price, quality, and delivery schedule. In addition, any item previously contracted for and furnished by small business would be considered a repetitive set-aside by PL 95-507 and would be impossible to award to a large company even if the large company had been the original manufacturer, unless the competition and market price criteria mentioned above were not met. Therefore, the SPCC contracting officer has no choice but to award a contract to a small business even if NAVELEX feels that large business could do a better job.

To achieve the small business goals, the contracting officer may be forced to issue solicitation documents with "marginally adequate" technical data to suppliers with untested capabilities.

I. 4G LIFE CYCLE USAGE

There is some evidence from demand usage reports of 4G electronic items that there is a "bathtub curve" effect

during the life cycle of these items. This failure rate curve might appear as the diagram below for a particular item [21]:



A failure rate curve of this type shows that, when an item is new, a considerable number of failures occur. This could be due to early design problems, improper installation, use, or maintenance. As the item's design is improved or the equipment becomes more familiar to the technicians, the number of failure begins to level off. When the item begins to approach the end of its useful life, the failure rate again goes up because of wear-out failures.

The primary concern that relates to the SPCC/NAVELEX interface is how can SPCC determine where a particular item is on the "bathtub curve" when it is transferred to SPCC. Ideally the item will have gone through its initial high failure rate period and be in the level failure rate period

when it is transferred to SPCC. If this is not true then SPCC may initially contract for and carry inventories that are much higher than necessary to support the item.

When an item has entered the final phase of its life cycle and usage again starts to rise significantly, SPCC should be aware that the end of the useful life of the item is approaching. By this time, NAVELEX should be considering a completely new item. If NAVELEX determines that the old item should be phased out and a new item phased in, it is important that SPCC be made aware of this decision. If SPCC is not aware of the planned phase-in/phase-out process being considered by NAVELEX then the result could be increased stocking levels at SPCC which would then have to be disposed of. At the present time there is no formal method established to deal with this situation.

J. SUMMARY

The intent of this chapter was to establish a framework of issues that are applicable to both NAVELEX and SPCC and form a basis for recommendations/conclusions outlined in the next chapter. The problems outlined in this chapter are those that appear to be of primary concern to those individuals directly involved in the NAVELEX/SPCC interface. The chapter should not be viewed as a compilation of all possible areas of concern but rather as a starting point for further discussion.

V. RECOMMENDATIONS/CONCLUSIONS

The primary objective of this chapter is to offer alternatives for the major issues addressed in chapter IV. The common thread that runs through all of these issues is that methods must be developed to improve the transfer of technical procurement data from NAVELEX to SPCC. This must be accomplished if the system if to operate more effectively.

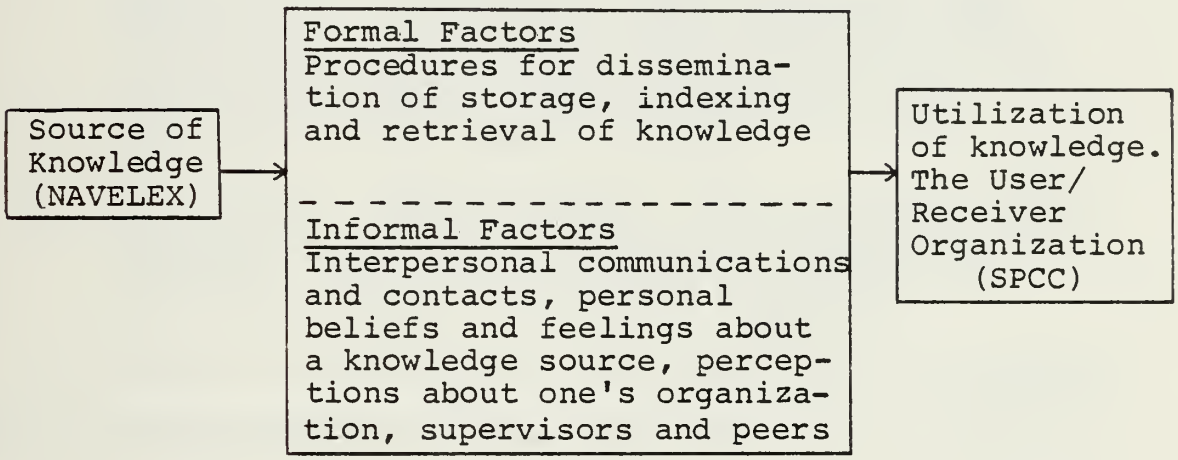
It should be recognized that the purchase operation at SPCC is, for the most part, a production line type of operation. As such, the purchase function is dependent upon the completeness of the package presented. If the technical data portion of the contracting package is incorrect then problems will surely develop in the future. These problems result in delays that reduce the maximum through-put in the procurement operation.

A. TECHNICAL TRANSFER

The fact that technical procurement data must be complete and correct cannot be overemphasized. If the data is incorrect then an obsolete or non-compatible item may be purchaed. Earlier chapters explained the PLT time pressure and requirements for competitive procurement placed upon SPCC. These pressures combined with the pressure from the fleet to have their required parts as soon as possible form an institutional force that drives SPCC to use the data at hand for a procurement.

If no data is available then SPCC may order an item by NSN or manufacturer's part number in order to meet the Required Delivery Data (RDD).

The transfer of data between SPCC and NAVELEX can be broken down into formal and informal data transfer and is conceptualized in figure 3 [1].



Formal and Informal Factors in Data Transfer

Figure 3

Formal factors are things such as the Joint SPCC/NAVELEX-DETMECH Instruction. These factors operate in a fairly direct manner and are system oriented. The formal factors are generally considered to be straightforward because they take a physical form and are therefore available at all times to clarify questions that may arise.

The informal factors are considered much more difficult to control because they are based on behavioral science rather

than a physical item [1]. Some specific areas to consider in the area of informal factors are:

1. Capacity - This refers to characteristics of individuals in the user organization (SPCC) that are described by terms like education, experience, age, self-confidence, etc.

2. Linker - This is essentially the individual or group of individuals who links the source of knowledge and the user of the knowledge.

3. Credibility - If the user does not believe the message he is getting, he will reject it. The information that is being transferred must therefore emanate from a source that is at least credible according to the perception of the recipient or the potential user.

4. Willingness - Simply stated, this is the fact that a man who is going to make use of a piece of technical data must be willing to receive the message and must be willing to implement.

In the case being studied, the linker can be considered as the NAVELECDETMECH and those they deal with are NAVELEX and SPCC. One question that arises is "are the key people that perform this linker function the ideal "linker type" individuals?" Some potential linker attributes are:

1. Innovative;

2. Willing to accept risk;

3. Active in Multi-Disciplines;

4. Many information contacts;

5. High credibility with peers;

6. Oriented towards outside information sources.

How do you identify such people and what do you do if personnel currently in the organization are identified to be nonlinkers?

A Linker/Stabilizer Validity Census was conducted by the Naval Facilities Engineering Command Headquarters (NAVFAC) in 1972 [3]. The survey involved Civil Engineering Corps Officers and NAVFAC civilian personnel GS-8 and above. The results of the study are shown in figure 4.

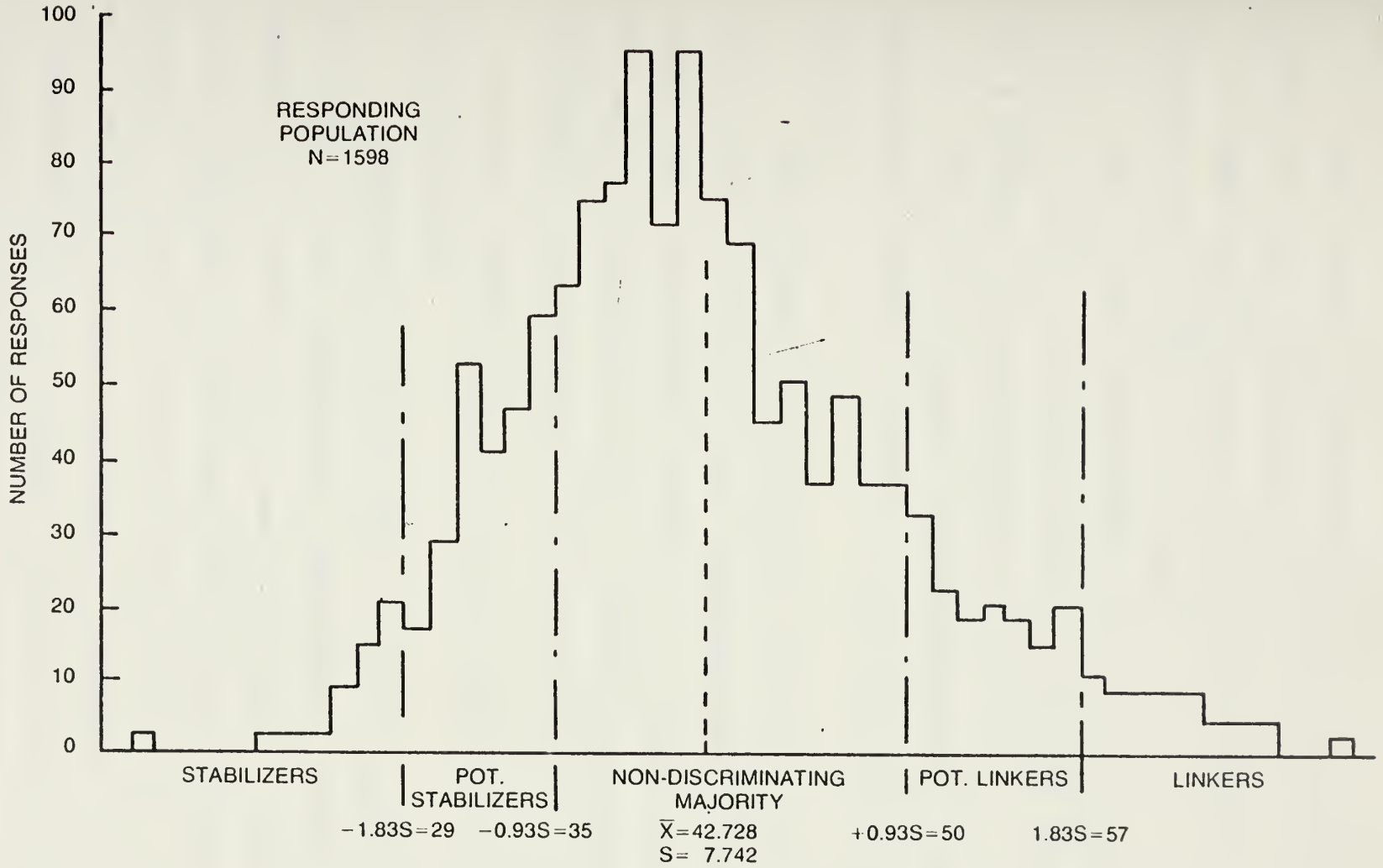
As this study clearly indicates, the number of persons that fall into the ideal linker category is very small compared to the total population. An additional aspect of the problem is that people with the ideal linker characteristics would be in demand in any organization. Therefore, if it is assumed that the average person will have some of these traits but only to a limited degree, formal factors of technical transfer are a must.

B. TECHNICAL SUPPORT AGREEMENT

As indicated earlier, the SPCC/NAVELEX interface contains a mimumum of documentation in the area of formal factors of data transfer for 4G items. This situation could be improved with the addition of a Technical Support Agreement. Some of the areas the Technical Support Agreement could address are:

1. Specific times technical procurement data is to be turned over to SPCC and updated by NAVELEX.

2. Procedures by which SPCC is to be notified when technocal data is under review at NAVELEX. (This could impact on contracts SPCC currently has intentions of awarding.)



A distribution of the scores of the Government Service employees in response to the questionnaire which was intended to measure the magnitude of their stabilizer-linker traits.

Figure 4

3. How is SPCC to be notified when an item is to be phased out or has become obsolete?

4. When specific steps will be taken to insure the technical data at SPCC is up-to-date?

5. What is the SPCC/NAVELEX joint policy concerning getting an item to the fleet as fast as possible vs. waiting for a complete engineering review of the item?

6. What are the specific responsibilities of the COG Engineer at NAVELEX in relation to the technical data held by SPCC?

7. The agreement must recognize the need to develop sources other than the Original Equipment Manufacturer (OEM) in most cases even though the overall life-cycle cost of the item may not be reduced. This is necessary to meet the many requirements for competition found in government contracting.

Such an agreement might address the key items in the following manner:

1. NAVELEX will provide SPCC a complete technical procurement data package suitable for competitive procurement, sole source (with justification), restricted source (source controlled drawings) or procurement from a DOD industrial activity. As required by DAR 3-200 and DAR 3-300, the information must be accurate and adequate to support the preparation of a determination and findings justifying the negotiation with the source or sources indicated in the package.

2. All technical problems shall be coordinated with the cognizant engineer or program manager at NAVELEX through the NAVELEXDETMECH. Copies of all correspondence between NAVELEX and the NAVELEXDETMECH that relates to a specific technical data problem will be forwarded to SPCC.

3. SPCC will submit to NAVELEX a listing of "active" 4G items. NAVELEX will review the list and insure all items listed are technically updated on the SPCC files as changes occur. Every six months NAVELEX and SPCC personnel will meet and determine what items have not been updated and what action if any should be taken.

4. NAVELEX will attempt to keep those items that are not "active" up to date as changes occur. However, as a minimum, at least 25 percent of the non-active items will be updated annually according to a random selection process. No item will be repeated in this updating process until all other items have been updated the same number of times. In this way, the number of non-active items will be reviewed on a systematic basis that everyone is aware of. Also, a review of this type will allow NAVELEX to identify those items that are already obsolete and should be dropped from inventory by SPCC.

The need for such a systematic process can be seen by a review of figure 5.

Figure 5

SAMPLE OF REQUISITION ACTIVITY AT SPCC

QUARTERLY REQN FREQ	PERCENT OF TOTAL ITEMS IN COG GROUP				PERCENT OF TOTAL REQUISITIONS BY COG			
	1H	2H	4G	4N	1H	2H	4G	4N
10 or more	-	1.6	1.9	2.4	-	25.	46.	27.
4 to 10	-	0.8	-	2.0	-	23.	-	24.
5 or more	2.4	-	-	-	63.	-	-	-
3 to 5	1.6	-	-	-	10.	-	-	-
1 to 10	-	-	7.7	-	-	-	42.	-
1 to 3	4.7	-	-	-	15.	-	-	-
Under 1	17.7	-	31.0	-	12.	-	12.	-
0.5 to 4	-	7.3	-	13.7	-	43.	-	43.
Under 0.5	-	16.4	-	22.3	-	9.	-	6.
None in 2 yrs	73.6	73.9	59.4	59.6	0	0	0	0

Reading example: "Two percent of all 4N COG Items had a requisition frequency between 4 and 10 per quarter, and accounted for twenty-four percent of all 4N COG requisitions."

Approximately half of SPCC-managed material is classified under COG codes 1H, 2H, 4G, and 4N. In an SPCC analysis prepared for other purposes, the material in these four COG codes was analyzed in terms of the frequency or requisition of individual items. One result of their analysis is displayed in Figure 5 which demonstrates, among other things, the surprising number of items with either a low or insignificant demand rate. The aggregate percentage of items within these four COG codes having no demand in two years is seventy-two percent [22].

Figure 5 indicates that 59.4 percent of all 4G items are not active. Therefore, a review of these items appears appropriate to determine what items may be eliminated from the SPCC inventory.

Appendix C and D are examples of technical support agreements between NAVSUP/SPCC, the Naval Sea Systems Command (NAVSEA) and the Naval Ordnance Command (NAVORD) (1972). These agreements might be used as models for a possible SPCC/NAVELEX technical support agreement.

C. COMMERCIAL SPECIFICATIONS VS. MILITARY SPECIFICATIONS

The cost of technical data associated with items that will become 4G should be included as a separate line item in the original procurement contract at NAVELEX whenever possible. In this way, technical data costs can be evaluated by life-cycle-cost analysis and a decision can be made on whether the complete technical package should be purchased or if commercial specifications would be cheaper.

Items to consider in this area are:

1. NAVELEX should identify what technical data they believe is required to adequately review all contracts for technical data delivered under an SPCC contract.

2. A system should be established to identify savings that could be associated with commercial specifications vs. military specifications over the life of the item.

3. The technical data agreement should include a separate section that addresses the need for maximum use of commercial

specifications unless military specifications are specifically approved by a designated individual in NAVELEX.

Factors that favor commercial specifications over military specifications are:

1. Military specifications tend to complicate contract administration and increase costs. This is caused by inaccurate or incomplete military specifications being provided to contractors. When this occurs, the government must then authorize delays in delivery while the current contractor attempts to develop the "unknown" portions of the data or the government must negotiate with the original manufacturer and purchase the required data.

2. Military specifications result in obsolete items being procured at times. As previously stated, SPCC assumes the data on file is correct and ready for contract award. If it is not then the item being purchased could be obsolete before it even gets into the inventory.

3. Military specifications increase logistics support costs because of the many reviews that must be conducted to keep them up to date. This translates into consumption of administrative and engineering resources that might be more productively used in other areas.

One solution to limit the use of military specifications would be the requirement of justification for their use when commercial specifications can meet the requirement.

1. The AN/SRN-12 Case

An example of available commercial equipment being considered superior to equipment required by military specifications is the Standard Navy Omega Navigation Receiver (AN/SRM-12). The SRN-12 unit was introduced into the fleet in the early 1960's at an initial price of $4,000 per unit. The units now cost about $30,000 each. They are purchased to military specifications on a sole source basis. The SRN-12 requires constant personnel attention in order to acquire and maintain an accurate position. It also does not read latitude and longitude so special charts and tables are required which must be updated and the unit is too large and heavy to be installed in small ships.

The Navy planned to replace the SRN-12 with the newer NAVSTAR/GPS system. Only low value or non-combat ships would retain the original SRN-12 equipment.

The SRN-12 units currently in use are not projected to be cost effective to maintain throughout the 1980's.

Therefore, a replacement program was undertaken for the old system. The goal was to reduce operator work load and skill level, increase system effectiveness, reduce acquisition and support costs, and reduce system size and weight.

The three possible alternatives were:

a. Attempt to update the existing units through field changes.

b. Develop a new military specification.

c. Approve a commercial receiver.

The field change alternative was rejected by NAVELEX because it would equal in cost or exceed the cost of a commercial receiver and acquisition would continue to be sole source to military specifications [23].

The development of new military specifications was not considered cost effective due to the estimated research, development, test and evaluation costs of approximately $800,000, as well as unacceptable lead times required.

As the cognizant Hardware Systems Command (HSC), NAVELEX subsequently forwarded to CNO, via NAVMAT and the Chief of Naval Personnel, a recommendation that existing AN/SRM-12 units be replaced by commercial OMEGA receivers. It was noted that about half a dozen U. S. manufacturers produced OMEGA units commercially that could be approved for Navy use.

The Navy's OP-094 (Command Control) and OP-03 (Surface Warfare) agreed that the SRN-12 should be replaced but only on those ships that would not receive the NAVSTAR/GPS navigation system. The idea being that it could be considered a waste of resources to have ships equipped with two new navigation systems.

OP-942 (Command, Control and Information) stated that the FFG-7 program could not be modified for the commercial OMEGA unless the CNO made a strong commitment to change to the new standard on all SRM-12 equipped ships.

This apparent conflict of opinions, combined with a Commander Operational Test and Evaluation Force recommendation to the CNO that the test program established by NAVELEX for commercial OMEGA Units be much more elaborate, combined to delay the plan. The delays imposed by the more elaborate test program negated any possibility of using the commercial receiver in the FFG-7 program and these ships will now be built with AN/SRN-12 receivers [23].

Since the FFG-7 program is the only ship-building project underway with any significant number of ships, it appears the commercial substitution for the SRN-12 unit will not occur in the near future.

This case points out the problems encountered in the bureaucracy when attempting to replace military specifications with commercial specifications. In order to implement such a program one must be aware of the normal delays built into the system and the problems of special interest protection that will be encountered.

One of the factors that may change attitudes in the area of commercial specifications is Senate Bill S.5 (96th Congress), the Federal Acquisition Reform Act. To date, this bill has not passed but it was introduced in the 94th, 95th and 96th Congresses and it appears to be only a matter of time before it is enacted.

Following are excerpts from the Bill which relate to commercial items and government specifications:

SEC. 2.(b)(3) encourage innovation and the application of new technology as a primary consideration by stating agency needs and analyzing the market so that prospective suppliers will have maximum latitude to exercise independent business and technical judgements in offering a range of competing alternatives.

SEC. 2.(b)(9) rely on and promote effective competition; to insure the availability to the Government of alternative offers that provide a range of concept, design, performance, price, total cost, service, and delivery; and to facilitate the competitive entry of new and small sellers.

TITLE I - REGULATORY GUIDANCE

SEC. 102.(a)(1)(D) The Administrator for Federal Procurement policy is authorized and directed...to establish and oversee a program to reduce agency use of detailed product specifications.

TITLE II - ACQUISITION BY COMPETITIVE SEALED BIDS

SEC. 202.(c) To the maximum extent practicable and consistent with needs of the agency, functional specifications shall be used to permit a variety of distinct products or services to quality and to encourage effective competition.

SEC. 202.(d) The preparation and use of detailed product specifications in a purchase description shall be subject to prior approval by the agency head. Such approval shall include written justification, to be made a part of the official contract file, delineating the circumstances which preclude the use of functional specifications and which require the use of detailed product specifications in the purchase descriptions.

TITLE III - ACQUISITION BY COMPETITIVE NEGOTIATION

SEC. 302.(b)(1)...In any case, if price is included as a primary or significant factor, the Government's evaluation shall be based where appropriate on the <u>total cost</u> to meet the agency need.

SEC. 302.(c) To the maximum extens practicable and consistent with agency needs, solicitations shall encourage effective competition by:

(1) Setting forth the agency need in functional terms so as to encourage the application of a variety of technological approaches and elicit the most promising competing alternatives.
(2) not prescribing performance characteristics based on a single approach, and
(3) not prescribing technical approaches or innovations obtained from any potential competitor.

SEC. 302.(3) (Same as SEC. 202.(d) above)

SEC. 514. All specifications shall be reviewed at least every five years, and shall be cancelled, modified, revised, or reissued as determined by such a review.

Under "definitions" the terms "total cost," as found in SEC. 302.(b)(1), and "functional specification," as found in SEC. 202.(c) are defined as follows [27:7-8]:

SEC. 3. For the purpose of this Act-(f) the term "total cost" means all resources consumed or to be consumed in the acquisition and use of property or services. It may include all direct, indirect, recurring, non-recurring, and other related costs incurred, or estimated to be incurred in design, development, test, evaluation, production, operation, maintenance, disposal, training, and support of an acquisition over its useful life span, wherever each factor is applicable.

(g) The term "functional specification" means a description of the intended use of a product required by the Government. A functional specification may include a statement of the qualitative nature of the product required and, when necessary, may set forth those minimum essential characteristics and standards to which such product must conform if it is to satisfy its intended use.

In summary, it is evident that the use of commercial specifications is worthy of serious consideration and should be evaluated in a test involving NAVELEX and SPCC and possibly NAVMAT.

D. COMPUTER INTERFACE

As noted in chapter II, SPCC and NAVELEX have computer programs to assist in their acquisition process. Although both of these programs are maintained in the SPCC UICP computer system, the individual programs do not update one another. Personnel at SPCC Codes 370 and 380 and the NAVELEXDETMECH are unaware of the RACC/ATS system at NAVELEX. It would appear to be beneficial to both commands if the acquisition programs could be modified in order that data could be transferred between the two systems. Some examples of the information that could be exchanged would be codes that would notify SPCC when a 2Z item has been dropped from the NAVELEX acquisition cycle. This would allow SPCC to question the action and determine which 4G and 1H items should then be reduced in level or eliminated completely. Codes could be used to notify SPCC when new technical data has been used in the procurement of a primary item at NAVELEX for which SPCC maintains 4G repair parts. Again, this would be a signal to SPCC that the technical data it has on hand should probably be reviewed and updated.

In both cases an active process would be established to deal with the situation rather than relying on a re-active after-the-fact mode of operation.

1. NAMIS

The RACC/ATS system is currently undergoing revision. The revised system will be known as the NAVELEX Acquisition

Management Information System (NAMIS). The objectives of NAMIS are [24]:

a. Receive, establish and maintain, on a central repository, requirements as they become known.

b. Consolidate and review all requirements for an item for a designated acquisition year and recommend a method of satisfying them.

c. Add or revise requirements data on a real-time basis.

d. Track and monitor acquisition milestones for both pre-award and post-award actions.

e. Monitor status of OPN funds and maintain financial balances.

f. Generate maintenance transactions to update affected data bases.

g. Generate requirements status to affected areas as actions occur.

h. Provide real-time inquiry/update capabilities to the maximum extent possible.

i. Generate reports and statistics to support all phases of this operation.

Figure 6 is the proposed information flow for the NAMIS system.

If the additional requirement for interfaces with programs utilized by SPCC Codes 380 and 370, which are also UICP programs, could be installed during the early stages of the NAMIS development, a great benefit could result for SPCC and NAVELEX in the area of the 4G interface.

INFORMATION FLOW CHART FOR THE PROPOSED NAMIS SYSTEM

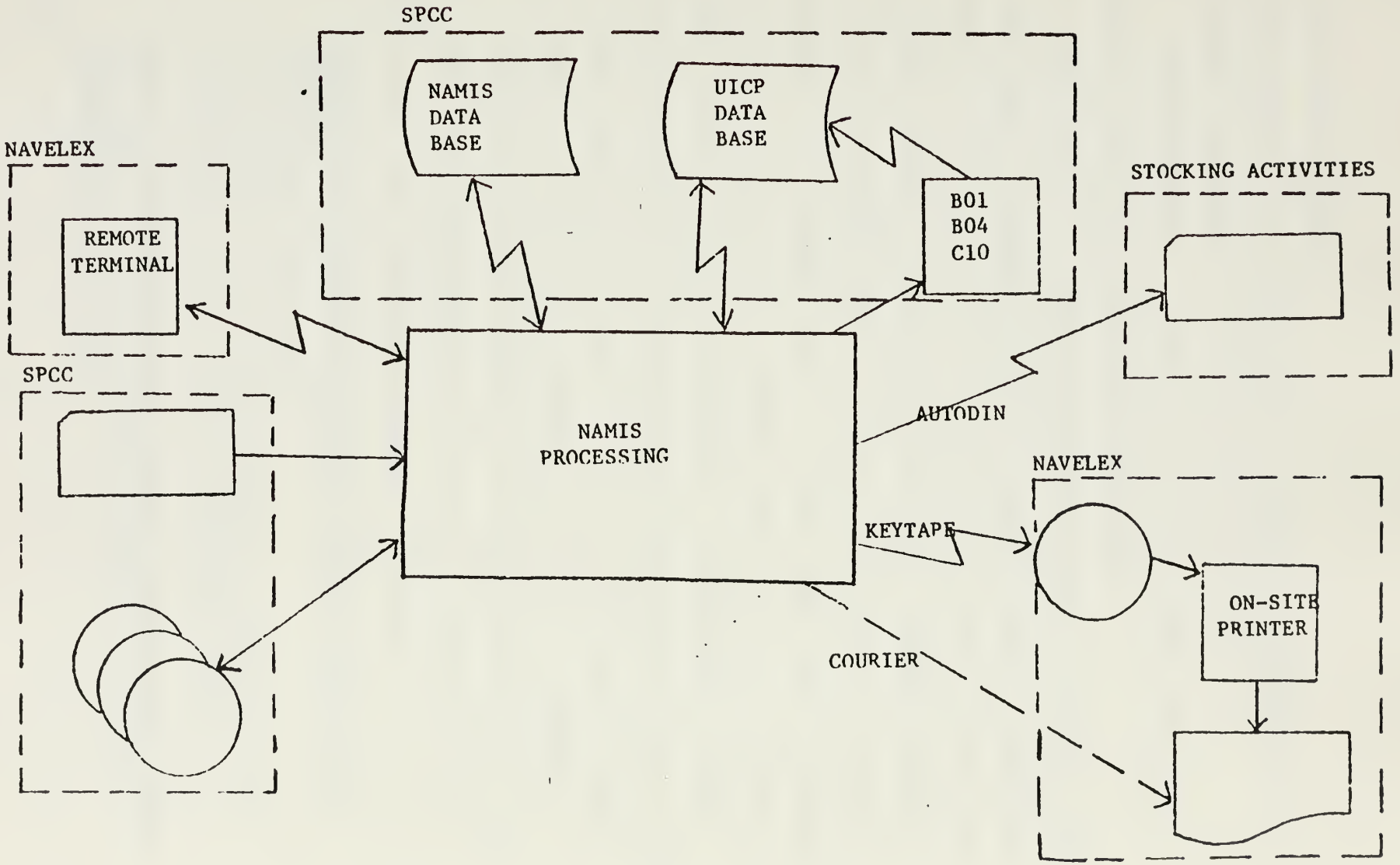


Figure 6

E. ADDITIONAL ACTIONS

Additional actions that could be taken to facilitate the SPCC/NAVELEX interface in the 4G area would be:

1. NAVELEXDETMECH and SPCC Code 370 personnel should be included in the stock coordination meetings.

2. There should be some agreement on what a "stable" item is. SPCC tends to define an item as stable when the technical procurement data package can be awarded to several contractors and the same product is received from each. NAVELEX tends to view an item as stable when its failure rate falls to what is considered to be a normal level. If this term could be defined to the satisfaction of both commands then the actual timing of an item's transfer could be effected. An agreement in this area would decrease the likelihood that SPCC would have to transfer 4G items back to 2Z (at the February 1981 stock coordination meeting 18 items were transferred back to NAVELEX).

3. Another term that needs to be clearly defined is "end item." This term has different meanings to different people. Following are a few attempts to define the term:

> Contractor Furnished Equipment Support Team, Study Report
>
> CHIEFNAVMAT, March 1980
>
> An end item...is an item, either an individual part or assembly, in its final or completed state.
>
> Joint SPCC/NAVELEXDETMECH Internal Instruction 4355.8
>
> End item. ...any repairable "JETDS" item can be considered an end item.

MIL-STD-1375 (NAVY) 23 NOV 1970

End item - a component or components, necessary assemblies, subassemblies, and parts connected or associated together to perform an operational function.

NAVELEX 340A, Memorandum for the Record, Ser 5050 of 14 May 1978

The NAVELEX defintion of an end item is one for which a P1 line item budget is required for material support. These items must continue to be presented by NAVELEX program sponsors during the budget process.

Seebeck's thesis [26] has a good discussion of the term end item. This discussion is contained in Appendix E.

F. HARDMAN

Items that should be considered by the two commands in the future are the manpower and training implications in the acquisition process. This area is receiving increased emphasis now that the HARDMAN project office has been established. This section includes a short discussion of the HARDMAN Studies findings and recommendations.

With recent dramatic increases in manpower costs within the Department of Defense (DOD) and the prospective reductions in the size of the national labor pool, the Navy has taken new interest in assessing manpower and training requirements in terms of their afforability and availability during weapon system development. The Navy's specific program in this area was the Military Manpower versus the Hardware Procurement (HARDMAN) Study. This study has resulted in a HARDMAN project

office (OP-122) being established and efforts are underway to develop a program that will institutionalize the requirement to fully consider manpower and training implications in the acquisition decision-making process.

Findings of the HARDMAN study were as follows [25]:

1. Requirements for manpower planning and tradeoff analysis in the Weapon Systems Acquisition Process (WSAP) occur too late and fail to address the major issues.

2. DOD and DON directives and instructions concerning WSAP are piecemeal and fail to reflect a systematic statement of procurement policy and guidance for managers to follow.

3. Key participants in the acquisition process often lack the analytical tools for determining and insuring visibility for manpower and training requirements early in system development.

Recommendations of the HARDMAN study were:

1. Establish a HARDMAN Project Office with the mission to insure that manpower and training analysis is conducted timely during the WSAP.

2. Develop HARDMAN capabilities to support the early identification and review of manpower and training requirements.

3. Implement analytical tools and review procedures supporting HARDMAN functions in the WSAP.

4. Develop HARDMAN improvements through revised procedures and a HARDMAN Information System.

It is envisioned that the major benefits resulting from HARDMAN will be:

1. Early consideration of manpower and training issues in the WSAP so effective tradeoffs between hardware design and manpower can be made.

2. The ability to monitor the status of all weapon systems and associated manpower/training requirements in the acquisition process.

3. The ability to produce standard Navy documentation more quickly and efficiently.

4. Overall coordination and monitoring of the manpower/training aspects of weapon system development.

The issues pointed out by the HARDMAN study indicate that the human factor will increase in importance in the development of hardware in the future. This will impact upon the NAVELEX/SPCC interface as these commands attempt to work together to provide the fleet with the best items possible.

G. AREAS FOR FUTURE STUDY

The impacts of the HARDMAN study concerning the requirement to consider manpower and training in all future acquisitions has not been fully felt to date. However, manpower has been a top priority of senior Navy managers for several years and it appears this area will be of growing importance in the future. Research in this area would probably be helpful in keeping those involved in the SPCC/NAVELEX interface aware of what requirements HARDMAN places on them.

The proposed Federal Acquisition Reform Act also contains sections that could impact on the SPCC/NAVELEX interface. Its emphasis on reliance of the private sector, reduction of specifications and use of functional purchase descrpitions could drive changes in the future methods of contracting for

4G items. This would also appear to be a fruitful area for further research.

H. SUMMARY

This chapter has been an attempt to offer a few suggestions that might improve the SPCC/NAVELEX interface in the 4G area. There appears to be the need for the development of a standard system of data transfers that can be referred to when questions arise or personnel change. Without such a standard system, the methods of data transfer may change as time passes or no record will be maintained of what has transpired. Also, when new personnel with different personalities become part of the system, there is a very strong likelihood that they will modify the system to meet their desires. The audit trail needed to determine what should have happened and where things might have gotten off track will not exist. Without a formalized system, documented by say a Technical Support Agreement, the needed audit trail cannot be provided.

It is not practical for SPCC to forward all contracts to NAVELEX for technical review before award because of the delays that would result in the contract award. By the same toke, it would not be practical for NAVELEX to update all technical data at SPCC each time a change occurs because many items are not active. Therefore, a mechanism should be developed that clearly states when and what items will be reviewed and updated. This method could be a technical data agreement, a computer

interface, or a hardcopy publication that is provided to SPCC on a routine basis, or a combination of all three.

In addition to the items listed above, what ever method is implemented must also have the capability of notifying SPCC when a 2Z item has become obsolete or discontinued by NAVELEX. This is required so SPCC will know to not contract for additional 4G repair parts for the obsolete items.

The fact that the state of the art in electronics is changing at an increasing rate every year must be addressed. If 4G items are to be based on military specifications then the need for increased engineering manpower to keep the specifications up to date must also be addressed. If the decision is to continue with most 4G items being built to engineers' military specifications, it would be beneficial to have a knowledgeable engineer in the SPCC Code 380 (Technical) organization to review technical data packages just before contract award.

On the other hand, if most 4G items can be purchased according to commercial specifications, this should reduce demand for engineering talent. This would result because fewer people would be required to update military specifications. Interviews with contracting personnel at NAVELEX, SPCC, and NAVMAT indicate that all of these players realize that the time is rapidly approaching when hard decisions must be made in this area.

Currently the life cycle of 4G items falls under the split responsibility of SPCC and NAVELEX. This fragmentation, in its current form, does not lend itself to careful life cycle costing of an item. The goal of both commands should be to develop the best possible item at the least possible cost. Only by viewing the complete life cycle of an item can such a goal be achieved. Therefore, any formal agreement that is developed by the two commands must incorporate the idea of complete life cycle costing.

PROCUREMENT SPECIFICATION AND DOCUMENT SHEET
NAVSPCC 4250/29 (REV 12-77) LOCAL

SECTION F

N00104-80-B-0423

PROCUREMENT SPECIFICATION AND DOCUMENT REFERENCES

PAGE NO. OF 14

TYPE	TOP DRAWING NO.	NOMENCLATURE	APPLICATION
N1285-00-466-2220	560816	Oscillator Radio Freq	AN/SPG55B Radar

DOCUMENTS SUPPLIED TO CONTRACTOR

FSCM	DRAWING NUMBER	REV
56232	560816	A

DOCUMENT REFERENCES

SPECIFICATION NUMBER

(#1)

*Note: Item to be Mfg in Accordance with Attached Advanced Copy of ECO A 50300 which is Part of this Specification

(#2) 100% testing (other than FA/PLT) IAW all requirements, except note (5), of Dwg 560816

(#3) MIL-I-45208 applies

DOCUMENT CHANGES

FROM	TO

NAME	CODE	TEL EXT	DATE
[illegible]	3811	2889	1/11/79

NEXT ASSY	USED ON
1056263	AN/SPG558

FOR REVISION RECORD SEE LAST SHEET

GENERAL: PARTS SUPPLIED SHALL COMPLY WITH ALL THE REQUIREMENTS SPECIFIED ON THIS DRAWING AND ANY VENDOR'S NUMBER SHOWN ON THE PURCHASE ORDER. ANY VENDOR PART NO. APPLICABLE MUST BE LISTED ON P.O.

J. F. Morgan
8/21/78

ECO. A 50300

ADVANCE COPY

SPERRY ITEM CODE					
B	C	D	E	F	H
	27				75

OPERATIONAL NOTE
SPECIFICATION
CONTROL DRAWING

11	10	9	8	7	6	5	4	3	2	1	REV SHEET	SHEET INDEX

SPERRY CLASS CODE ~~SHEET MUST NOT BE SUPPLIED TO VENDORS~~

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DEC ANGLES

SPERRY CLASS S

FILE CARD

FIRST USED ON 1047108

CONTRACT NOW66-0030K

DRAWN BY [illegible] DATE 4-2-69

CHECKED BY [illegible] DATE [illegible]

APPROVED FOR SPERRY [illegible] DATE 6/24/69

APPROVED FOR SPERRY DATE

APPROVED FOR DATE

GYROSCOPE COMPANY
DIV OF SPERRY RAND CORP. GREAT NECK, NEW YORK

TITLE
OSCILLATOR, RADIO FREQUENCY

SIZE	CODE IDENT NO.	DRAWING NO.	REV
A	56232	560816	A

SCALE NONE | WT | SHEET 1A OF

EXT ASSY	USED ON	LTR	DESCRIPTION	DATE	APPROVED
660292	AN/SPG55B				

.0 DESCRIPTION:

1.1 OSCILLATOR, CRYSTAL

1.2 THIS SPECIFICATION GOVERNS THE REQUIREMENTS FOR A CRYSTAL OSCILLATOR/OVEN COMBINATION CONTAINING 19 CRYSTALS SELECTABLE VIA 19 POSITION ROTARY DETENT SWITCH, WITH END STOPS AT POSITION 1 AND 19.

.0 GENERAL REQUIREMENTS:

2.1 THE CRYSTAL OSCILLATOR SHALL MEET ALL REQUIREMENTS OF THIS SPECIFICATION.

2.2 APPLICABLE DOCUMENTS.

MIL-STD-167(SHIPS) - MECHANICAL VIBRATIONS OF SHIPBOARD EQUIPMENT.
MIL-S-901 (NAVY) - SHOCK TEST, H.I. (HIGH-IMPACT): SHIPBOARD MACHINERY, EQUIPMENT, AND SYSTEMS, REQ FOR.
MIL-E-15090 - ENAMEL, EQUIP, LIGHT-GRAY (FORMULA NO. 11)
MIL-STD-130 - IDENTIFICATION MARKING OF U.S. MILITARY PROP.
MIL-F-18870 - GENERAL SPEC, FIRE CONTROL EQUIPT, NAVAL SHIP AND SHORE.

.0 ELECTRICAL REQUIREMENTS:

3.1 FREQUENCIES (MC): 19 FREQUENCIES BETWEEN 47.4 AND 48.2 MC

3.2 POWER OUTPUT: 2.0 MW MIN. WITHOUT RETUNING FOR 19 CRYSTALS.

3.3 OUTPUT IMPEDANCE: 50 OHMS NOMINAL

3.4 FREQUENCY ADJUSTMENT: EACH CRYSTAL FREQUENCY MUST BE CAPABLE OF SEPARATE ADJUSTMENT ±500 CYCLES MINIMUM ABOUT THE SPECIFIED CENTER FREQUENCY, OR PROVIDE ADEQUATE ADJUSTMENT FOR 15,000 HOURS SERVICE.

3.5 SPURIOUS OUTPUTS: ALL SPURIOUS OUTPUTS, NOT INCLUDING HARMONICS, SHALL BE AT LEAST 80 DB DOWN FROM DESIRED OUTPUT.

12	11	10	9	8	7	6	5	4	3	2	1	SHEET	REV	SHEET INDEX
					A	A	—	—	—	A	A			

LESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTION ± 1/64 ANGLES ± PLACE DECIMALS ±.010 PLACE DECIMALS ±	SPERRY GYROSCOPE COMPANY DIVISION OF SPERRY RAND CORPORATION GREAT NECK, N.Y. APPD [illegible] DATE [illegible]	DEPARTMENT OF THE NAVY NAVAL ORDNANCE SYSTEMS COMMAND WASHINGTON D.C. 20360
NOT SCALE THIS DRAWING	CONTR NO. NOW66-0030K	
	DRAWING NO. 560316	OSCILLATOR, RADIO FREQUENCY SPECIFICATION CONTROL DRAWING
TERIAL:	DRAWN [illegible] CHKD [illegible]	
	APPD MFG APPD SK	
	APPD FOR NAVORD [illegible]	SIZE A · CODE IDENT NO. 10001 · NAVORD DRAWING NO. 2660387
	APPD FOR	SCALE NONE · SHEET 1 OF 7

SEE SUPP SH 1A
SPERRY DRAWING NO. [illegible] SHEET 1

3.6 FREQUENCY ACCURACY: 0.75 PART IN 10^6 PER 2000 HOURS ACROSS THE OPERATING TEMPERATURE RANGE.

FREQUENCY STABILITY: 5 PARTS IN 10^8 PER 24 HOURS AT ROOM AMBIENT TEMPERATURE. 1 PART IN 10^7 PER 24 HOURS ACROSS THE OPERATING TEMPPERATURE RANGE. 1 PART IN 10^7 WITH LOAD VSWR CHANGES OF 1.0 TO 1.3.

3.7 OPERATING TEMPERATURE RANGE: 0 TO +50°C.

3.8 POWER AVAILABLE:

3.8.1 22V DC, 500MA. MAX., REGULATION ±0.01% RIPPLE 800 u VRMS MAX., CHANGE WITH TEMP. 0.04% PER DEGREE C.

3.8.2 115V RMS ±10% 50 TO 400 CPS, 25 WATTS MAX.

3.9 WARM-UP TIME: 30 MINUTES MAXIMUM FROM LOWEST AMBIENT TEMPERATURE. TO OBTAIN ±1 X10-6. ACCURACY; ACCURACY WILL BE ATTAINED 1 MINUTE AFTER APPLICATION OF OPERATE VOLTAGE.

3.10 TEMPERATURE SENSOR: NORMALLY OPEN CONTACTS CLOSING AT 1 X 10-6, ACCURACY. SWITCHING 25 VDC AT 0.1 AMP.

.0 MECHANICAL REQUIREMENTS:

4.1 DIMENSIONS: SEE FIGURE 1

4.2 CONNECTORS:

4.2.1 RF OUTPUT: BNC UG88E/U

4.2.2 POWER & CONTROL: BENDIX PT06E 12-8P CONNECTIONS OR EQUIV.

A - +22V DC OVEN
B - +22V DC OSCILLATOR
C - 115V 400 CPS
D - GROUND
E - TEMPERATURE SENSOR
F - TEMPERATURE SENSOR
G - 115V 400 CPS
H - SPARE

4.3. FINISH: SHALL BE PER MIL-F-18870, IF PAINTED, PER MIL-E-15090 FORMULA NO.11.

4.4 SWITCHING TORQUE: 32 IN. OZ. MAX.
16 IN. OZ. MIN.

4.5 PIECEMARK: MARK WITH NAVORD CODE IDENTIFICATION AND DRAWING NUMBER 10001-2660387 AND MANUFACTURERS NAME OR SYMBOL AND PART NO. PER MIL-STD-130.

SIZE	CODE IDENT NO.	NAVORD DRAWING NO.
A	10001	2660387

SCALE NONE SHEET 2 OF

SPERRY DRAWING NO. 2660386 A SHEET 2

5.0 ENVIRONMENTAL REQUIREMENTS:
THE OSCILLATOR MUST BE CAPABLE OF OPERATING AS SPECIFIED HEREIN UNDER THE FOLLOWING ENVIRONMENTAL CONDITIONS EXCEPT FOR SHOCK AND VIBRATION. MEASUREMENTS SHALL BE PERFORMED BEFORE AND AFTER SHOCK AND VIBRATION TEST TO DETERMINE COMPLIANCE WITH THIS SPECIFICATION. THERE SHALL BE NO EVIDENCE OF DEGRADATION OF PERFORMANCE OR MECHANICAL DAMAGE AFTER SHOCK AND VIBRATION TESTS.

5.1 OPERATING TEMP. RANGE: (AMBIENT): 0 TO +50°C

5.2 STORAGE TEMPERATURE RANGE: (AMBIENT): -55°C TO +75°C

5.3 OPERATING LIFE: 3 MONTHS OR 2000 HOURS WITHOUT ADJUSTMENT FOR SPECIFIED ACCURACY. 10,000 HOURS SERVICE.

5.4 VIBRATION:
REFERENCE TO MIL-STD-167
THE UNIT SHALL MEET THE REQUIREMENTS OF MIL-STD-167 WITH THE EXCEPTION OF PARA. 3.1.4.3.3. WHICH SHALL READ AS FOLLOWS:

ENDURANCE TEST:
THE EQUIPMENT SHALL BE VIBRATED FOR A TOTAL PERIOD OF AT LEAST 2 HOURS, AT THE RESONANT FREQUENCIES CHOSEN BY THE TEST ENGINEER. IF NO RESONANCE WAS OBSERVED, THIS TEST SHALL BE PERFORMED AT 25 CPS. THE AMPLITUDES OF VIBRATION SHALL BE IN ACCORDANCE WITH TABLE I.

TABLE I - AMPLITUDES OF VIBRATION

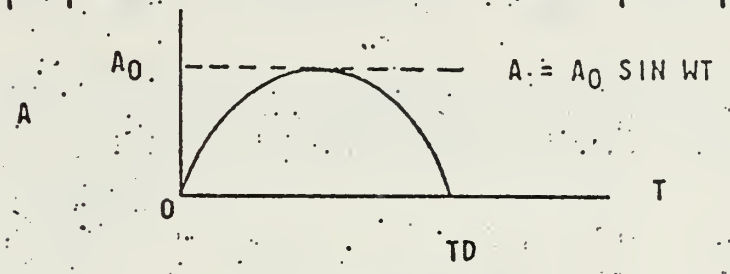
FREQUENCY RANGE - CPS	TABLE AMPLITUDE PLUS OR MINUS IN.
5 TO 15	0.15 ±0.03
16 TO 25	0.10 ±0.02

5.5 SHOCK: REFERENCE TO MIL-S-901
THE UNIT SHALL MEET THE REQUIREMENTS OF MIL-S-901 WITH THE FOLLOWING EXCEPTIONS:
CHANGE THE REFERENCE PARAGRAPHS OF MIL-S-901 TO READ AS FOLLOWS:

REFERENCE TO MIL-S-901	CHANGE TO READ
4.2.1	SHOCK TESTING MACHINE. THE SHOCK TESTING MACHINE SHALL BE CAPABLE OF GENERATING A HALF-SINE SHAPED PULSE AS DEFINED BELOW:

SIZE	CODE IDENT NO.	NAVORD DRAWING NO.
A	10001	2660387
SCALE NONE		SHEET 3 OF

SPERRY DRAWING NO. 560816 SHEET 3



WHERE:
A = ACCELERATION IN G'S
T = TIME IN SECONDS
A_0 = PEAK VALUE OF ACCELERATION = 17G
T_D = DURATION OF PULSE IN SECONDS = .040 SECONDS
G = ACCELERATION OF GRAVITY
W = FREQUENCY IN RADIANS/SECONDS = $\frac{}{T_D}$

THE SHOCK TESTING MACHINE SHALL BE CAPABLE OF PRODUCING THE SHOCK PULSE WITH A TOLERANCE OF ±15% ON THE TIME DURATION, T_D. HOWEVER, ANY VARIATION IN THE ACTUAL TIME DURATION SHALL BE SUCH THAT THE GT PRODUCT (I.E., THE PRODUCT OF PEAK MEASURED SINUSOIDAL G VALUE DURATION) IS EQUAL TO OR GREATER THAN THE NOMINAL GT PRODUCT OF 17G X .04 SECONDS (=.68).

5.5 (CONTD.)

REFERENCE TO MIL-S-901	CHANGE TO READ
4.2.3.1	METHOD OF MOUNTING: FASTEN TO A SUITABLE ANVIL BY SECURING THE EQUIPMENT AS IT WILL BE SECURED IN THE OPERATING ENVIRONMENTS.
4.2.4.1.1	A TOTAL OF NINE SHOCKS SHALL BE APPLIED. THREE SHOCKS SHALL BE APPLIED PARALLEL TO EACH OF THE THREE PRINCIPAL AXES OF THE EQUIPMENT BEING TESTED THE THREE SHOCKS IN EACH DIRECTION SHALL RESULT IN PEAK APPLIED ACCELERATIONS OF 7.6G, 13.3G AND 17G RESPECTIVELY. TOLERANCES ON THE APPLIED ACCELERATION LEVELS SHALL BE ±15% AT THE TWO LOWER LEVELS, AND AS SPECIFIED IN PARAGRAPH 4.2.1 AT THE 17G LEVEL.

SIZE	CODE IDENT NO.	NAVORD DRAWING NO.
A	10001	2660387

SCALE NONE SHEET 4 OF

LTR	DESCRIPTION	DATE	APPROVED

5.6 HUMIDITY: THE EQUIPMENT SHALL BE CAPABLE OF STARTING AND OPERATING IN ATMOSPHERE HAVING A RELATIVE HUMIDITY AS GREAT AS 95% IN TEMPERATURES UP TO +40°C AND CONSTANT WATER CONTENT AT TEMPERATURES OF PLUS 40°C AND ABOVE.

5.7 FREQUENCIES CHANNELS 1-19:

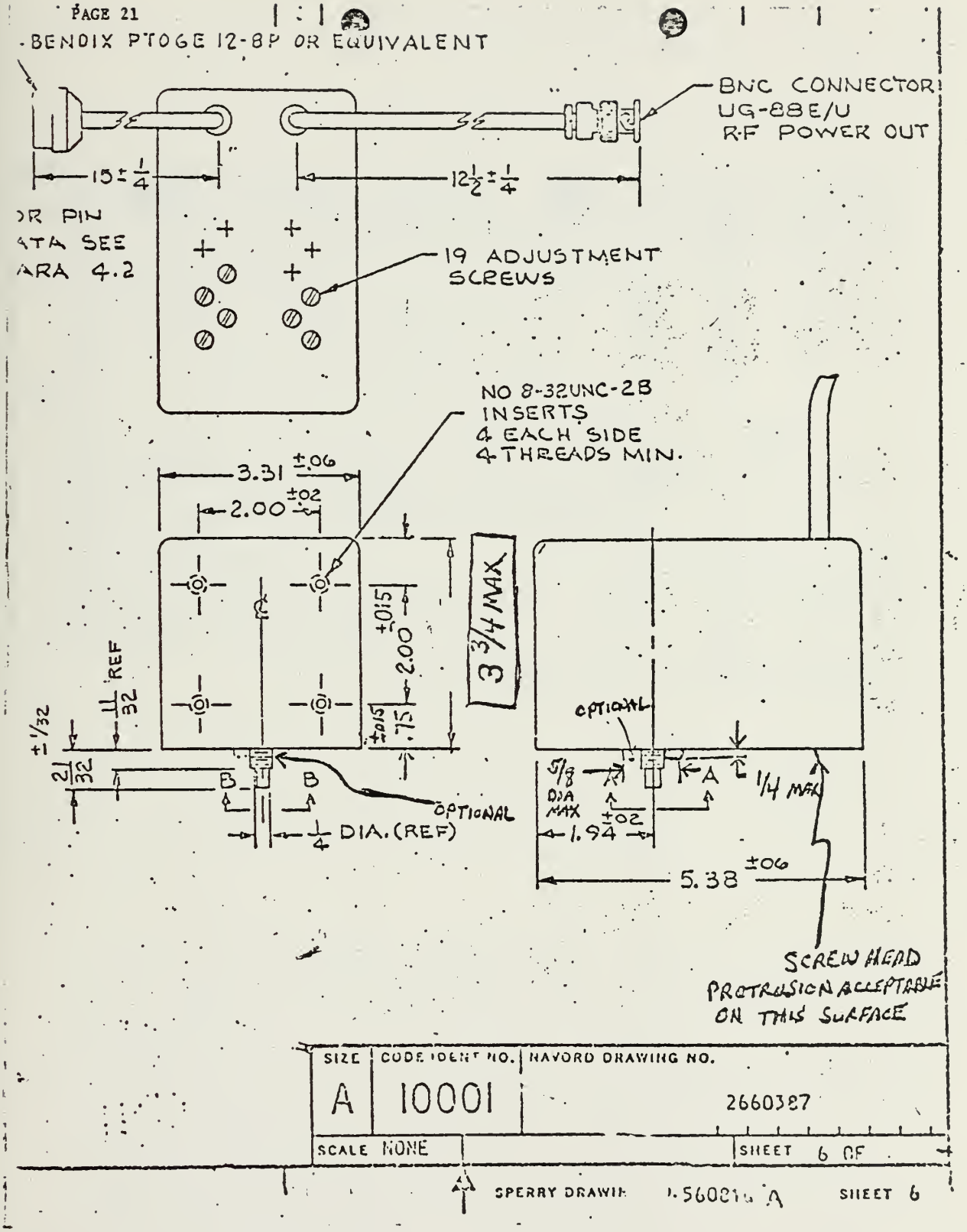
1.	47 476 851 HZ	11.	47 515 416 HZ
2.	47 592 592	12.	47 746 898
3.	47 708 333	13.	48 132 731
4.	47 824 074	14.	47 978 380
5.	47 939 814	15.	47 785 509
6.	48 055 555	16.	48 016 991
7.	48 171 296	17.	47 554 028
8.	47 631 157	18.	47 862 639
9.	47 901 250	19.	47 669 769
10.	48 094 120		

6. INTERPRET DRAWING IN ACCORDANCE WITH STANDARD PRESCRIBED IN MIL-D-1000.

SIZE	CODE IDENT NO.	NAVORD DRAWING NO.
A	10001	2660387

SCALE NONE SHEET 5 OF

SPERRY DRAWING NO. [illegible] SHEET [illegible]


BENDIX PTOGE 12-8P OR EQUIVALENT
BNC CONNECTOR
UG-88E/U
R.F POWER OUT
15 ± 1/4
12 1/2 ± 1/4
19 ADJUSTMENT SCREWS
NO 8-32UNC-2B
INSERTS
4 EACH SIDE
4 THREADS MIN.
3.31 ±.06
2.00 ±.02
3 3/4 MAX
2.00 ±.015
.75 ±.015
11/32 REF
±1/32
21/32
B
B
OPTIONAL
1/4 DIA. (REF)
OPTIONAL
5/8 DIA MAX
A
A
1/4 MAX
1.94 ±.02
5.38 ±.06
SCREW HEAD PROTRUSION ACCEPTABLE ON THIS SURFACE
SIZE
CODE IDENT NO.
NAVORD DRAWING NO.
A
10001
2660387
SCALE NONE
SHEET 6 OF
SPERRY DRAWING
SHEET 6

	C. DALT 6555 SH. 1 TH. 7		
A	SH1: FP 2.2 ADDED MIL-F-1887, SH INDEX REV SH2: FP 4.3 WAS: FINISH: PER MIL-E-15090 FORMULA NO. 11, FP 4.2.2 WAS: POWER & CONTROL: MS 3116E12-8P PIN CONNECTIONS SH6: UPPER LH CORNER CALLOUT WAS "CONNECTOR, MS3116E12-8P" DCP 2-1620 CONTR N00017-69-A-2313 SPERRY CO. 011004 (M)	4/8/71	WH

F-2 CONFIGURATION CONTROL - ENGINEERING CHANGES, DEVIATIONS AND WAIVERS (9/72)

MIL-STD-481 entitled "Configuration Control - Engineering Changes, Deviations and Waivers" is hereby incorporated. During the performance of the contract the Contractor shall submit all Engineering Change Proposals, and all requests for waivers and deviations in accordance with MIL-STD-481 and the provisions of this clause. The DD Form 1693 and/or DD Form 1694 shall be submitted to the Administrative Contracting Officer for distribution to addresses indicated by an "X" in the blocks below.

F-8 CHANGES IN DESIGN, MATERIAL SERVICING, OR PART NUMBER - Except for Code 1 Changes, which shall be processed as provided in the code statement shown below, no substitution of items shall be made until the Contracting Officer, SPCC, has been notified and approval has been given by issuance of a written change order. When any change in design, material, servicing or part number is made to replace or substitute any item to be furnished hereunder, the Contractor shall furnish, for the item to be substituted, a drawing and an explanation of the reason for the change, or a detailed description of the change, explaining the reason therefor. If finished detail drawings are not available, shop drawings in the form used by the manufacturer will be acceptable. When notifying the Contracting Officer of the reasons for making substitutions, the type of change shall be indicated in accordance with one of the following statements:

CODE

1. (Applies if supplies procured hereunder are for stock) - PART NUMBER CHANGE ONLY - If the Manufacturer's Part Number indicated thereon has changed, but the parts are identical in all respects, supply the item and advise SPCC immediately of the new part number.

(Applies if supplies procured hereunder are for immediate use) - PART NUMBER CHANGE/MINOR DESIGN CHANGE - If the Manufacturer's Part Number or Item Design indicated thereon has changed, but form fit and function of the item is not affected thereby, supply the item and advise SPCC immediately of the new part number, furnishing a detail drawing and/or a detailed description of the change, as applicable.

4. Assembly (or set or kit) not furnished - use following detail parts.

5. Part not furnished separately - use assembly.

21. Part redesigned - old and new parts are completely interchangeable.

22. Part redesigned - new part replaces old. Old part cannot replace new.

23. Part redesifned - parts not interchangeable.

F-15 CONFIGURATION CONTROL - ENGINEERING CHANGES, DEVIATIONS, WAIVERS & TECHNICAL INQUIRIES

MIL-STD-481 entitled "Configuration Control - Engineering Changes, Deviations and Waivers" is hereby incorporated. During the performance of the contract the Contractor shall submit all Engineering Change Proposals, and all requests for waivers and deviations in accordance with MIL-STD-481 and the provisions of this clause.

1.a. The Design Control Activity/In Service Engineering Activity (DCA/ISEA) for the supplies under this order/contract is identified in paragraph 6 below. Accordingly, as provided for in paragraph 4.4.1 of MIL-STD-481, proposed engineering changes, deviations and waivers shall be submitted direct to the cognizant DCA/ISEA. A copy of each ECP, waiver or deviation shall be submitted concurrently to:

(1) Navy Ships Parts Control Center
Ordnance Branch, Code 381
P.O. Box 2020, Mechanicsburg, PA 17055

(2) Contract Administration Office
(if other than SPCC)

2. Contractors shall also refer technical inquiries other than those covered by MIL-STD-481 to the DCA/ISEA with copies distributed as in paragraph 1.a.

3. The DCA/ISEA will forward within 30 days after receipt, the analysis of the ECP or waiver, deviation or technical inquiry to the Navy Ships Parts Control Center, Ordnance Branch, Code 381 P.O. Box 2020, Mechanicsburg, PA 17055.

4. Contractors are cautioned that implementing responses to ECPs, waivers, deviations or technical inquiries into the order/contract without approval of the Procurement Contracting Officer will be at the sole risk of the contractor.

5. The DCA/ISEA has been delegated the authority and responsibility for technical requirements and quality assurances as referenced in ASPR 14-201. Technical guidances concerning specific government inspection action will be provided to the Contract Administration Office (CAO) if considered necessary by the DCA/ISEA. Contract administration quality functions shall be performed by the CAO.

F-17 Configuration Control - Engineering Changes, Deviations and Waivers

MIL-STD-481 entitled "Configuration Control - Engineering Changes, Deviations and Waivers" is hereby incorporated. During the performance of the contract the Contractor shall submit all Engineering Change Proposals, and all requests for waivers and deviations in accordance with MIL-STD-481 and the provisions of this clause. The DD Form 1693 and/or DD Form 1964 or equivalent contractor form or letter, provided the form or letter contains the same information required by the DD Form 1693/1694, shall be submitted to the Administrative Contracting Officer (ACO) for distribution to addresses indicated by an "X" in the blocks below.

When engineering changes or revisions do not affect any factor listed in 5.2 of MIL-STD-481, they shall be authorized (or disapproved) by the local Government Quality Assurance Representative (QAR) or by the Contract Administration Office (CAO) except as noted in the obsolete and substitute conditions listed below. Engineering changes represented by a change in top drawing number from that specified in the contract required approval of the Procurement Contracting Officer (PCO). A later revision than that specified in the contract may be authorized provided the QAR or the CAO concur that the revision does not affect any of the factors in 5.2 of MIL-STD-481. A copy of the drawing representing revisions or change in top drawing number other than that specified in the contract shall be forwarded to the PCO prior to contract completion. The drawing shall completely identify the revision or change.

OBSOLETE OR SUBSTITUTE ITEMS

In addition to the factors in 5.2 of MIL-STD-481 and in the event parts described by drawing(s) referenced in this contract are unobtainable due either to obsolescence, nonavailable materials/parts, minimum buys, untenable deliveries, etc., the

contractor shall use the following documents in the order ot precedence listed below in the selection of parts and materials;

(a) MIL-STD-242

(b) MIL-STD-143 and its order of precedence except for items selected under Group IV. Where original Group IV items identified in the drawings were specifically approved by the Hardware Systems Command for use in the original equipment acquisition, a substitute Group IV item shall be submitted for approval of the PCO in accordance with the provisions of this clause and MIL-STD-749.

Group II, III and IV items in MIL-STD-143 shall not be substituted for Military Specification items identified in the applicable drawings specified in the contract without the approval of the PCO.

No. of Copies	To
One	/7 Contracting Officer (374) Navy Ships Parts Control Center Mechanicsburg, PA 17055
--	/7 (Other)

APPENDIX C [29]

QUALITY ASSURANCE, TECHNICAL AND LOGISTIC SUPPORT

Ref: (a) NAVMATINST 4400.15
(b) NAVSUP/04D Joint Letter of 3 Jul 1968
(c) NAVSUP/04D Joint Letter of 2 Dec 1968
(d) NAVORDINST 5400.11A
(e) NAVORDINST 5400.12B
(f) NAVORDINST 5400.13A
(g) NAVORDINST 5400.10
(h) NAVORDINST 4855.11A
(i) NAVORDINST 4423.1A
(j) NAVMATINST 4400.14A
(k) NAVORDINST 4130.10
(l) MIL-STD-480
(m) MIL-STD-481
(n) NAVORDINST 4275.3
(o) NAVMATINST 4423.4
(p) NAVSUPINST 4423.11A
(q) NAVSUPINST 4441.19A
(r) NAVMATINST 4440.42
(s) NAVORDINST 4000.9
(t) NAVSUPINST 4120.33B
(u) NAVORDINST 4855.6
(v) SECNAVINST 4200.23A

1. General. This agreement establishes the working relationship and mutual understanding reached among NAVORD (Naval Ordnance Systems Command Headquarters), NAVSUP (Naval Supply Systems Command Headquarters) pertinent to QA (Quality Assurance), technical and logistic guidance in support of NAVORD material per references (a), (b), and (c), the NAVORD ISEAs (In-Service Engineering Agents) and the ICPs (Inventory Control Points), (i.e. SPCC (Ships Parts Control Center) and ESO (Electronics Supply Office)).

2. Objective. The objectives of this agreement are to:

a. Assure total NAVORD and NAVORD ISEAs support to the ICPs,

b. Assure ICP support to NAVORD and NAVORD ISEAs,

c. Increase the liaison among NAVORD, the ISEAs and the ICPs,

d. Minimize the NAVORD/ISEA/ICPs response time,

e. Define and establish a working agreement that will assure the cognizant ICP (SPCC and ESO) is provided with complete and accurate quality assurance, technical and logistic support information.

3. Scope. The intent of this agreement is to define the respective support actions and responsibilities of NAVORD, the cognizant NAVORD ISEAs, and the ICPs to materially support the U. S. Navy Fleet, shore activities, and the International Logistics Program. Actions, guidance, and directions resulting from this procedure shall be in accordance with NAVMAT (Naval Material Command), NAVSUP, and NAVORD policies, instructions, and agreements. This agreement entails no explicit or implicit reallocation of responsibilities to or from NAVORD, NAVSUP, NAVORD ISEAs or SPCC/ESO. This agreement defines more precisely the implied support relationships rather than to redefine, reallocate or expand respective responsibilities.

4. Responsibilities and Authority

4.1 The ISEAs listed in references (d), (e), and (f) are the technical activities to whom the Commander, Naval Ordnance Systems Command has delegated the authority for the quality assurance and technical requirements referred to in ASPR 14-201. These ISEAs are responsible for all the quality assurance, technical, and logistic duties specifically defined and contained herein (references (a) through (v)), for NAVORD Weapons Systems material administered by either SPCC or ESO except:

a. On SPCC/ESO initiated contracts, purchase orders, work requests, project orders, etc. where the NAVORD ISEAs listed in references (d), (e) and (f) are not responsible or totally responsible for all the quality assurance, technical and logistic support functions contained in this agreement. In these cases the cognizant NAVORD technical manager or program manager shall notify SPCC/ESO in writing which activity/activities is/are responsible for specific quality assurance, technical or logistic support functions.

b. On NAVORD initiated procurement requests, requisitions, contracts, or project orders that are executed and administered by SPCC/ESO. In these cases the NAVORD technical manager or program manager who initiated the procurement request, requisition or project order is responsible for supplying the complete quality assurance, technical and logistic requirements and support in accordance with current NAVORD instructions. All SPCC/ESO questions or requests regarding NAVORD initiated procurement requests, project orders, etc. and resulting contracts shall be directed to the NAVORD technical code or program manager who initiated the procurement request, etc. and/or to the activity(ies) so specified in the NAVORD procurement request as being responsible for the specific function(s).

c. If there are exceptions in specific systems or equipments, listed in references (d), (e) and (f); or, the support actions in paragraph 4.2 have been retained by NAVORD or delegated by NAVORD to another activity or activities. In those cases the cognizant NAVORD technical manager or program manager shall update references (d), (e), and (f) and/or notify SPCC/ESO in writing which activity or activities is/are responsible for the support actions in paragraph 4.2.

d. On ammunition, this support agreement does not amend, supersede or redefine the following:

(1) NAVORD Instruction 4000.12

(2) NAVORD Instruction 4130.7A

(3) NAVORD Instruction 4130.8

(4) NAVORD Instruction 4855.10

(5) NAVORD Instruction 5400.33

(6) NAVORD Instruction 5450.41

(7) NAVORD Instruction 5450.42B

4.2 In performing the support actions in this agreement the cognizant ISEA will:

a. Provide SPCC/ESO complete procurement technical data packages suitable for competitive procurement or submit factual information which will support limiting the procurement to a sole source, restricted sources (source controlled drawings) or procurement from a DOD industrial activity. As required by ASPR 3-200 and ASPR 3-300, the information must be accurate and adequate to support the preparation of a determination and findings justifying negotiation with the source or sources indicated. ISEAs may edit documentation to provide only that required and will insure that all drawings/documentation, as updated, will be forwarded to the cognizant ICPs. ISEAs may elect to supply a complete list of the required technical data rather than supply the actual documentation, drawings, specification, etc. ISEAs shall provide any missing technical information listed to SPCC/ESO upon request. See reference (g).

b. Provide SPCC/ESO complete technical and quality assurance requirements per paragraphs 4.a through 4.i of reference (h) NAVORDINST 4855.11A on all work authorizations, project orders, work requests, etc., for NAVORD weapons systems material.

c. Provide to SPCC/ESO the quality assurance and technical directions, approvals, guidance, reviews, investigations, corrective actions, and assistance necessary to timely and economically support applicable procurement actions.

d. Validate the capability of all government and contractor activities which are designated by NAVORD as a DOP (Designated Overhaul Point) for NAVORD repairable material. Provide validation status to SPCC/ESO. See references (i) and (j).

e. When deemed necessary, request to be a participant on pre-award surveys, post-award conferences, and pre-bid conferences on selected/critical/troublesome material, and respond to ICP requests for ISEA participation during same.

f. Provide directly to PCO (Procurement Contracting Officer) any necessary letters of delegation/instruction imposing manadatory product verification inspection actions and technical delegations; forward a copy to the cognizant CAO.

g. Specify any reviews or approvals that are required by ISEA/NAVORD on technical or quality matters, including waivers, deviations, and engineering changes. See references (k), (l), (m), and (n) for processing waivers, deviations and engineering changes. All ISEA reviews, approvals or recommendations for approval/disapproval e.g. waivers, deviations, etc. shall be forwarded directly to the PCO. All quality assurance and technical matters should be resolved prior to solicitation when possible. In those cases requiring changes during solicitation or after award, the PCO shall be notified promptly in writing. See references (k), (l), (m), and (n):

(1) All Class I ECPs require NAVORD approval;

(2) All Class I ECPs are to be reviewed by the CAO for classification only (never for approval!) and are to be approved/disapproved by the cognizant ISEA or NAVORD, as specified by the cognizant NAVORD technical manager or program manager.

(3) Major and critical waivers and deviations require approval/disapproval by the cognizant ISEA or NAVORD, as specified by the cognizant NAVORD technical manager or program manager.

(4) Minor waivers, deviations and MRB (Material Review Board) action approval authority is automatically delegated to the CAO unless specifically withheld by the PCO. See paragraph 4.2.i for withholding automatically delegated approval authority.

(5) It should be noted all the above ISEA/NAVORD approvals/disapprovals are recommendations to the PCO. The PCO is the only one who can contractually approve/disapprove contractors requests.

h. Request the PCO withhold, when necessary, specific technical and quality assurance functions when the performance of such functions can best be accomplished by the ISEA in accordance with ASPR 20-702.1 and 20-703.3 (a) and (c). Normal contract administration functions will be performed by the CAO per ASPR 1-406.

i. When deemed necessary, request the PCO withhold any approval authority automatically delegated to the CAO such as minor waivers, deviations and MRB (Material Review Board). In those cases where the ISEA recommends withholding automatic approval authority (via the PCO), all requests for approval by the contractor shall be forwarded by the CAO directly to the PCO with a copy to the cognizant ISEA. The cognizant ISEA shall review the contractors request and forward their recommendation for

approval/disapproval directly to the PCO. See paragraph 4.2.g.

j. Be cognizant of and assure corrective action on all quality and technical problems on NAVORD equipments and material. All quality problems shall be considered for induction into NAVORD's Replacement Component Quality Evaluation and Analysis Life Cycle Program. All technical problems shall be coordinated with the cognizant technical manager or program manager. Copies of all such correspondence shall be forwarded by the ISEA to the cognizant PCO. Assist the ICPs in resolving technical problems reported via the NAVSUP DMR (Defective Material Report) Program.

k. Provide engineering/technical assistance for effective resolution of Fleet support problem items. See references (b), (c), (i), (o), and (p).

l. Review periodic program procurement data e.g. "Projected Buy List" per paragraph 4.3.a and provide to SPCC/ESO identification of critical items, those under design change, and those that require no further referral to the ISEA.

m. Assure timely initial provisioning technical coding, e.g. PMC (Procurement Method Code), SM&R (Source, Maintenance and Recoverability), TORs (Technical Overrides), etc. per reference (i).

n. Review for concurrence APLs (Allowance Parts Lists) developed by the ICPs for completeness, accuracy and technical integrity concurrent with their distribution. All noted deficiencies in APLs shall be forwarded to SPCC/ESO for correction/updating of applicable APLs and COSALS (Coordinated Shipboard Allowance Lists). See enclosure (3) reference (o) and reference (q).

o. Perform technical coding, APL reviews and updates for NAVORD in-service weapons systems/equipments and spare parts. See references (i), (o), and (q).

p. Technically assist the ICPs in all follow-on provisioning and reprovisioning efforts. See references (i), (o), and (q).

q. Upon request, assist the ICPs to expedite material and material requisitions.

r. Provide maintenance and logistic support policy guidance to the ICPs as directed by the cognizant NAVORD Weapons/Program Managers.

s. Provide guidance on a case by case basis regarding cannibalization of NAVORD materials. See references (b), (c), and (r).

t. Provide provisioning, standardization and catalog support guidance and assistance. See references (c), (i), and (p).

u. Upon request, provide assistance to ICPs in expediting provisioning technical documentation.

v. Perform technical analysis of observed usage/demand information and advise SPCC/ESO of resulting changes to technical coding and replacement factors. See references (o) and (p).

(1) ISEAs may request usage/demand information from SPCC/ESO to perform above technical analysis.

w. Notify the ICPs upon final installation on all outstanding applications of all ORDALTS. Upon final installation of all ORDALTs, notify SPCC/ESO of hull numbers and/or activities affected; recommend disposition to SPCC/ESO on any ORDALTs remaining on hand in the supply system. This is in addition to the ORDALT completion summary report per reference (s) NAVORDINST 4000.9. Upon issuance of NAVORDINST 4000.9A the foregoing interim procedure will be discontinued and ORDLIS will provide consolidated ISEA data concerning ORDALT Kit disposition.

4.3 SPCC/ESO shall be responsible for:

a. Providing periodic notification to ISEAs of projected procurements, including indications of relative priorities. The periodic notification shall be forwarded to ISEA(s) a minimum of 90 days prior to projected procurement date(s). The projected buy list shall contain the information per paragraph 5.1.

b. Requesting ISEA support assistance on all procurements, project orders, work authorizations, and work requests per paragraph 5.1 except:

(1) In those cases where the ICP and ISEA agree that ISEA assistance is not necessary.

(2) On urgent requirements where SPCC/ESO cannot in their management opinion tolerate a delay, but in those cases SPCC/ESO shall immediately inform the cognizant ISEA per paragraph 5.1.

c. Notifying the ISEA of all quality and technical problems. Assist the ISEA in effecting prompt and effective corrective action.

d. Referring to the ISEA all requests from suppliers for waivers, deviations, and engineering change proposals on NAVORD material or parts.

e. Including a statement(s) in all contracts for NAVORD systems, equipments and materials that require the contractor to forward requests for approval via the CAO direct to the PCO with a copy to the cognizant ISEA on:

(1) Critical/Major Waivers

(2) Critical/Major Deviations

(3) Class I Engineering Changes

(4) Class II Engineering Changes

(5) Material Review Board actions when automatic approval authority has been withheld per paragraph 4.2.i above.

(6) Minor waivers and deviations when automatic approval has been withheld per paragraph 4.2.i above.

f. Forwarding a copy of all contracts, purchase orders, work authorizations, work requests, etc. for procurement of or overhaul/repair of NAVORD material to the cognizant ISEA. In those cases where the ISEA, upon review of the procurement document, determines the procurement technical data to be deficient in the areas of quality assurance, technical or logistics information, the ICP will be notified and will take necessary action to modify the contract or other authorization.

g. Forwarding a copy of all APLs to cognizant ISEA for review as described in paragraph 4.2.n.

h. Notifying NAVORD (ORD-043), on a monthly basis, of all actual/potential slippages in initial, follow-on, and reprovisioning.

(1) For SMS ORDALTs provide provisioning status to the ISEA in accordance with SMS INST 4423.1.

i. Submitting DD Form 1426 when any military specification or NAVORD WS (Weapons Specification) is used in a procurement action and any modification of the requirements thereof is made, either by exceptions placed in the contract or purchase order at the time of award or by amendments or change orders. The details shall be submitted to the Standardization Division (QA3) at NAVORDSTA, Indian Head. A DD Form 1426 Standardization Document Improvement Proposal or letter format may be used for this information submittal. See reference (t).

j. Assimilating usage/demand information and provide this information to the cognizant ISEAs in a suitable format upon justifiable request(s). See reference (q).

k. Supplying to cognizant ISEA, upon request, the additional data specified in paragraph 6.0.

l. Providing periodic depot repair workload, planning, scheduling priorities and production status reporting on all NAVORD systems, equipments and materials to the cognizant ISEAs and NAVORD per reference (j).

m. Notifying the cognizant ISEA of all cases where ISEA support assistance was not or will not be requested per 4.3.b above; therefore, the cognizant ISEA may review the contract, purchase order, work authorization, work request, etc. or project order for overhaul/repair after-the-fact. All contracts, purchase orders, etc. shall be forwarded to the cognizant ISEA per paragraph 4.3.f.

(1) In those cases where the ISEA reviews contracts, purchase orders, etc. after-the-fact, SPCC/ESO, when notified of deficiencies in the areas of quality assurance, technical or logistic requirements/information by the cognizant ISEA, shall take the necessary action to modify the contract or other applicable authorization.

n. Using the quality assurance, technical and logistic guidance, information, requirements, etc. furnished by the cognizant ISEA without modification. If changes are required by SPCC/ESO, the ISEA shall be notified prior to SPCC/ESO action.

4.4 NAVPRO Pomona (Gage and Standards Division) Responsibilities

a. To provide to SPCC/ESO a listing of all government-owned tools, gauges and test equipment available to support ICP procurements and repairables program(s) via the cognizant ISEA.

5. Procedures

5.1 Support Assistance

5.1.1 Requests

ICPs shall initiate a request for support assistance as soon as needs are planned, anticipated or received. See paragraphs 4.3.b and 4.3.m for exceptions, when ISEA support assistance is not requested to develop technical information. ICPs shall initiate urgent requests by telephone (by designated personnel), which shall be formalized by subsequent communications. Requests shall contain the following data:

a. Item nomenclature, part or drawing number, and Federal Stock Number.

b. Assembly drawing number and revision letter.

c. Quantity to be procured.

d. Contractor(s) under consideration (if known at time of request).

e. Equipment Application.

f. Date of last procurement and contractor procured from, and furnishing specification drawing number and revision letter if other than (b) above.

g. Specific information required.

h. Date/time response required.

5.1.2 Response. Upon receipt of request for assistance, the ISEA shall perform a review of the information provided and forward the required quality assurance and technical guidance for ICP usage.

5.1.2.1 The ISEA shall attempt to provide a timely response to all requests. Normally, routine requests shall be answered within 30 calendar days from receipt, or by the date/time required by the ICP. Whenever possible, priority requests shall be answered within seven calendar days; extremely urgent requests shall be answered within one calendar day.

5.1.2.2 The ISEA, in addition to the specific information requested by the ICP, shall review and provide requirements where applicable, in the following areas:

a. Technical documentation to be used, including the proper revision letter.

b. Adequacy of the TD package for competitive/ advertized procurement. See paragraph 4.2.a.

c. Supplementary Quality Assurance Requirements per reference (u).

(1) Contract Quality Requirements

(a) Contractors quality program or inspection system requirements (MIL-Q-9858A or MIL-I-45208A).

(b) First article; preproduction inspection and periodic production tests.

1 Quantity of samples required

2 Place of performance

3 Description of inspection and test requirements

4 Approval authority

5 Government participation or witnessing

(c) Other special quality requirements

1 Quality assurance environmental tests

2 Applicable classification of characteristics

3 Sampling inspection plan (inspection level, acceptable quality level)

d. Waiver, deviation, and engineering change approval authority - see paragraph 4.2.g.

e. Mandatory government inspection instructions

f. Requirements for vendor survey prior to contract award.

g. Validation will/will not be required on capability of overhaul/repair activities/DOPs.

5.1.3 Contact Points. By separate correspondence, the ISEA and the ICPs shall establish contact points by name, activity code and functional responsibility, and telephone extension. The designated representatives shall have authority to initiate requests, and to respond to requests by telephone (all such requests and responses to be limited to the guidelines of this document). Resulting quality assurance and technical decisions will be confirmed in writing to the ICP by the ISEA.

5.2 Support for Quality Problem Investigation and Corrective action.

5.2.1 Problem Investigation. Either the ICP or ISEA may initiate quality problem investigation when feedback data indicates such problems may exist. ICP requests for problem investigation may be initiated by routine correspondence or by telecon.

5.2.1.1 The ISEA shall be responsible for conducting the initial investigation, and for subsequent coordination with the ICP on problem identification and status.

5.2.1.2 Contact with the contractor will only be made when authorized by the PCO and then only for information purposes. Extreme caution must be exercised when making direct contact to avoid "constructive change orders." Contact with the cognizant CAO may be made by the ISEA for investigation purposes; however, all contractual direction to the CAO shall be made by the PCO. See reference (v) SECNAVINST 4200.23A.

5.2.2 Corrective Action

5.2.2.1 The ISEA shall be responsible for monitoring all quality and technical problems to a mutually satisfactory solution.

5.2.2.2 The ISEA shall advise the PCO of any recommended actions that involve either the contractor or the cognizant government representative. The PCO shall be responsible for formally requiring actions by contractors, the ACO or government quality assurance representatives.

5.2.2.3 The ISEA shall be responsible for initiating and assuring completion of actions involving technical inadequacies such as drawing changes, etc.

5.3 Coordination. To assure continued effectiveness and consistency of effort, SPCC/ESO shall use the requirement and information received from the ISEA without modification. If changes are required, the ISEA shall be notified prior to ICP action.

6.0 Additional Data

6.1 Additional data may be required by ISEAs in order to assist ICPs and NAVORD Program Managers; to perform tasks and special assignments in computing requirements to support current equipment configuration; to insure accurate APL review and update; to assist ICPs in resolution of fleet support problems; to evaluate reliability of equipment components; to review and analyze stock levels in relation to requests for cannibalization of NAVORD Weapons Systems Equipments. See reference (q), enclosure (3).

6.2 To perform these tasks effectively and to assure proper direction for adequate material support, ISEAs may periodically request the ICPs to furnish information relating to the below subjects when a demonstrated requirement exists:

(a) A Supply Availability Report which would include current assets, backorders, procurements, stock due-in from repair facilities, quarterly demand for NAVORD items.

(b) SNAPSHOT for selected equipments.

(c) Projected procurements for NAVORD items.

(d) Items under repair and rate of return from repair.

(e) Backorder listing for selected equipments with current supply support status on each item.

7.0 Changes or Revisions

7.1 This agreement shall be reviewed six (6) months after implementation by NAVORD and NAVSUP for any additions, deletions or clarification of respective support functions. All suggested additions, deletions or clarification shall be forwarded to NAVORD (ORD-044).

a. The resources and funding requirements will be monitored and quantified by the ISEAs and ICPs during the first six month period.

APPENDIX D [29]

(PROPOSED) NAVSEA-NAVSUP Quality Assurance and Technical Support Agreement for NAVSEA Cognizant Material assigned to Ships Parts Control Center (SPCC)

Ref: (a) NAVMATINST 5600.15C of 31 Oct 74, subj: Naval Material Command (NMC) points of contact for shipyard equipment
(b) NAVORDINST 5400.37 of 20 May 74, subj: Technical Responsibilities and Authority to Perform Engineering Functions for Naval Ordnance Systems and Equipments
(c) SPCCINST 4235.142 CH-2 of 7 April 76, subj: Project Orders/Work Authorizations issued by SPCC to DOD Industrial Activities/Designated Overhaul Points for repair/manufacture/overhaul and/or modification of Ordnance Systems and Equipments; procedures for processing of
(d) SPCCINST 4235.143 of 4 Aug 75, subj: Contracts Issued by SPCC for Procurement of Repair/Spare Parts and Materials for Ordnance Equipments/Systems; procedures for processing of
(e) COMNAVSEA Memo for the CHIEF OF NAVAL MATERIAL SEA 6112C1/GB of 29 Aug 74, subj: Technical Review of Procurement Requests at Navy Inventory Control Points
(f) SECNAVINST 4200.23A of 23 May 72, subj: Correspondence and oral communications with contractors concerning Department of the Navy contractual matters
(g) COMNAVSUP Memo for the CHIEF OF NAVAL MATERIAL of 28 Apr 75, subj: Technical Review of Procurement Requests at Navy Inventory Control Points (ICPs)

1. Purpose. This agreement establishes the working relationship and mutual understanding reached between NAVSEA and NAVSUP pertinent to quality assurance and technical support of NAVSEA cognizant material by the NAVSEA ISEAs and SPCC. As the main purpose of this agreement is to require actions by the NAVSEA ISEAs and SPCC, the background, general discussion, scope, actions, exceptions, NAVSEA cognizant ISEAs and general cognizant items have been placed at the end. (See pages 11-18.)

2. Cancellation. This agreement cancels and supersedes the NAVSUP-NAVORD Quality Assurance, Technical and Logistic Support Agreement for Ordnance Equipments assigned to SPCC (Ships Parts Control Center) and ESO (Electronic Supply Office) of 26 September 1972.

3. Intent. The intent of this agreement is to implement the fundamental objective of the Naval Material Command quality policy: More Efficient Support to the Fleet.

4. Cognizant ISEAs Listed in References (a) and (b) will:

a. Provide SPCC complete procurement technical data packages suitable for competitive procurement or submit factual information which will support limiting the procurement to a sole source, to restricted sources (source controlled drawings) or to procurement from a DOD industrial activity. As required by ASPR 3-200 and ASPR 3-300, the

information must be accurate and adequate to support the preparation of a determination and findings justifying negotiation with the source or sources indicated. ISEA may edit documentation to provide only that required and will insure that all drawings/documentations, as updated, are forwarded to SPCC. ISEAs may elect to supply a complete list of the required technical data rather than supply the actual documentation, drawings, specifications, etc. ISEAs shall provide any missing technical information listed to SPCC upon request.

b. Provide directly to performing DOD Industrial Activities complete technical and quality assurance requirements per reference (c) on all work authorizations, project orders, work requests, etc., for NAVSEA cognizant material.

c. Provide to SPCC the quality assurance and technical directions, approvals, guidance, reviews, investigations, corrective actions, and assistance necessary to timely and economically support applicable procurement actions.

d. When deemed necessary, request to be a participant on pre-award surveys, post-award conferences, and pre-bid conferences on selected/ critical/ troublesome material, and respond to SPCC request for ISEA participation during same.

e. Provide directly to CAO (Contract Administration Office) with a copy to PCO (Procurement Contracting Officer) any necessary letters of delegation/instruction imposing mandatory product verification inspection actions and technical delegations.

f. Specify any reviews or approvals that are required by ISEA/NAVSEA on technical or quality matters, including waivers, deviations, and engineering changes. All ISEA reviews, approvals, or recommendations for approval/ disapproval, e.g., waivers, deviations, etc., shall be forwarded directly to the PCO. All quality assurance and technical matters should be resolved prior to solicitation when possible. In those cases requiring changes during solicitation or after award, the PCO shall be notified promptly in writing. Delays in notifications of the PCO may precipitate claims against the government by the contractor. It should be noted:

(1) ISEA/NAVSEA approvals/disapprovals are recommendations to the PCO. The PCO is the only one who can contractually approve/disapprove contractor requests.

(2) All Class I ECPs require NAVSEA approval, unless approval authority is delegated to ISEA by NAVSEA.

(3) All Class II ECPs are to be reviewed by the CAO for classification only (never for approval) and are to be approved/disapproved by the cognizant ISEA or NAVSEA, as specified by the cognizant NAVSEA technical manager or program manager.

(4) Major and critical waivers and deviations require approval/disapproval by the cognizant ISEA or NAVSEA, as specified by the cognizant NAVSEA technical manager or program manager.

(5) Minor waivers, deviations and MRB (Material Review Board) actions approval authority is automatically delegated to the CAO unless specifically withheld by the PCO. (See paragraph 4.h for withholding automatically delegated approval authority.)

g. Request that the PCO withhold from the CAO, when necessary, specific technical and quality assurance functions when the performance of such functions can best be accomplished by the ISEA in accordance with ASPR 20-702.1 and 20-703.3 (a) and (c). Normal contract administration functions will be performed by the CAO per ASPR 1-406.

h. When deemed necessary, request the PCO to withhold any approval authority otherwise automatically delegated to the CAO's, such as minor waivers, deviations, and MRB (Material Review Board). In those cases where the ISEA recommends withholding automatic approval authority (via the PCO), all requests for approval by the contractor shall be forwarded by the ACO directly to the PCO with a copy to the cognizant ISEA. The cognizant ISEA shall review the contractor's request and forward its recommendations for approval/disapproval directly to the PCO. . .see paragraph 4.f. NOTE: On contracts containing the SPCC Clause F-15, "Designation of Technical Activity", contractors will submit concurrent copies of technical referrals to the cognizant ISEA designated in the contract as well as the CAO and the SPCC PCO. In many cases this will enable the ISEA to begin work on the referral without waiting for the requests to filter through the CAO and PCO. Upon completion of the action, the ISEA can then forward the decision/results to SPCC with a copy to the contractor and the CAO. Two copies of the decision/results should be forwarded to SPCC, one to the attention of Code 374, and one to the attention of Code 380. All correspondence should reference the contract number and NSN (National Stock Number). If it is necessary to discuss or clarify the contractor's inquiry, direct liaison with the contractor is authorized. The SPCC F-15 Clause precludes the contractor from taking action which affects the basic terms of the contract until a contract modification is issued by the PCO or ACO (Administrative Contracting Officer). For all other instances, the contractor can commence action immediately upon receipt of his copy of the ISEA's answer. The concurrent processing procedures should reduce production lead time by two to four weeks and also reduce the flow of paperwork on follow-up correspondence and messages.

i. Be cognizant of and assure positive corrective action on all quality and technical problems on NAVSEA equipments and material. All technical problems shall be coordinated with the cognizant technical manager or program manager. Copies of all such correspondence shall be forwarded by the ISEA to the cognizant PCO. Assist SPCC in resolving technical problems reported via the NAVSUP DMR (Defective Material Report) Program.

j. Review periodic program procurement data, i.e., "Projected Buy List" per paragraph 5.a. and inform SPCC of:

(1) Those items for which the ISEA will provide SPCC with updated quality assurance and technical requirements prior to procurement action(s). Items in this category will still appear on future projected buy lists and the ISEA will be notified prior to SPCC procurement per reference (d). Concurrent with submission of the updated quality assurance and technical requirements, ISEA(s) will inform SPCC whether the item(s) is or is not suitable for future automatic procurement.

(2) Those items that no longer have to be referred to the cognizant ISEA(s) for quality assurance and technical requirements and are suitable for automated buying, e.g., non-critical and/or design stable items with good quality history. Items in this category will not appear on future projected buy lists; therefore, it is incumbent upon the ISEAs to assure subsequent technical changes are forwarded to SPCC for updating the Purchase Data File (PDF). Items designated as suitable for automated procurement will be loaded into the PDF to allow greater utilization of automatic procurement, and any subsequent changes will be forwarded by ISEAs to allow updating the PDF without additional referral by SPCC. It should be noted that the ISEA's will receive copies of automatic procurement contracts after-the-fact.

(a) In those cases where the ISEA reviews contracts, purchase orders, etc., after-the-fact, and notes deficiencies in the area of quality assurance or technical requirements/information, the ISEA will so advise SPCC, including a statement concerning essentiality or criticality of the change and an estimated or cost impact resulting from the change, if available. SPCC shall then take necessary action(s) to modify the contract or other applicable authorization.

(3) Those items that no longer have to be referred to the cognizant ISEA for quality assurance and technical requirements, but are not suitable for automated buying, e.g., sole source items or unstable design items. Items in this category will appear on future projected buy lists, but the items will not be referred to the cogniant ISEA prior to procurement, unless the ISEA so requests, e.g., item is under consideration for an engineering change, quality is trending downward, or is suspect.

NOTE: The expressed purpose of the above three categories are:

a. To reduce the number of unnecessary technical referrals from SPCC to the ISEAs.

b. Increase the number of automated procurements.

c. Decrease the procurement lead time.

(1) Taking advantage of the 90 day advance notice given by the Projected Buy List, ISEAs will forward technical data packages to SPCC as soon as completed, i.e., normally prior to SPCC's request for quality assurance and technical requirements on a pending procurement per reference (d). The forwarding of completed technical data packages prior to SPCC's request, especially those suitable for automated procurement, will reduce SPCC procurement lead time and thereby expedite procurements. (See reference (e).)

k. Review the quarterly SPCC automated buying list and assure cognizant items are updated.

l. Review the periodic "Projected Project Order/Work Authorization List" per paragraph 5.b and assemble the technical package required by reference (c). It should be noted that SPCC reference (c) requires the ISEA(s) to forward the required quality assurance and technical requirements directly to the performing DOD Industrial Activity/Designated Overhaul Point after notification by SPCC.

(1) On subsequent project orders for the indentical item(s), the ISEA shall, as a minimum, inform the performing activity that the quality assurance and technical requirements are the same as in SPCC project order No. XXX.

m. Provide guidance on a case by case basis regarding cannibalization of NAVSEA materials.

5. SPCC shall be responsible for:

a. Providing quarterly notification to ISEAs of projected procurements, including indications of relative priorities. The quarterly notification shall be forwarded to ISEA(s) a minimum of 90 days prior to the projected procurement date(s). The projected buy list shall contain the information per paragraph 6.1. (See reference (g).)

b. Providing periodic notification to ISEAs of projected project orders/work authorization for repair, overhaul, or modification of NAVSEA items to be accomplished by DOD Industrial Activities/Designated Overhaul Points.

c. Requesting ISEA support assistance on all procurements, project orders, work authorizations, and work requests per paragraph 6.1 except:

(1) In those cases where SPCC and the ISEA agree that ISEA assistance is not necessary. (See paragraph 4.j.)

(2) On urgent requirements where SPCC cannot in their management opinion tolerate a delay, but in those cases SPCC shall immediately inform the cognizant ISEA per paragrpaph 6.1.

d. Notifying the ISEA of all quality and technical problems. ssist the ISEA in effecting prompt and positive corrective action.

e. Referring to the ISEA all requests from contractors to waivers, deviations, and engineering change proposals on NAVSEA material or parts. Note: Clause F-15 invoked by SPCC on contracts for NAVSEA cognizant items requires the contractor to send inquiries to the ISEA as well as the CAO and PCO. (See paragraph 4.h.)

f. Including a statement(s) in all contracts for NAVSEA systems, equipments and materials that require the contractor to forward requests for approval via the CAO direct to the PCO with a copy to the cognizant ISEA on:

(1) Critical/Major Waivers

(2) Critical/Major Deviations

(3) Class I Engineering Changes

(4) Class II Engineering Changes

(5) Material Review Board actions when automatic approval authority has been withheld per paragraph 4.h.

(6) Minor waivers and deviations when automatic approval has been withheld per paragraph 4.h.

g. Within 7 calendar days after award, forward a copy of all contracts, (appropriated and stock funded), purchase orders, work authorizations, work requests, etc., for procurement, or overhaul/repair of NAVSEA material to the cognizant ISEA. In those cases where the ISEA, upon review of the procurement document, determines the procurement technical data to be deficient in the areas of quality assurance or technical information, SPCC will be notified and will take necessary action to modify the contract or other authorization. The ISEA will normally complete the review on contractual documents within 30 days of receipt.

h. Submitting DD Form 1426 when any military specification or NAVSEA Specification is used in a procurement action, amendments or change orders. The details shall be submitted to the NAVSEASYSCOM Standardization Division (Code 605). A DD Form 1426 Standardization Document Improvement Proposal or formal letter may be used for this information submittal.

i. Notifying the cognizant ISEA of all cases where ISEA support assistance was not or will not be requested per paragraph 5.c; therefore, the cognizant ISEA may review the contract, purchase order, work authorization, work request, etc., or project order for overhaul/repair after-the-fact. All contracts, purchase orders, etc., shall be forwarded to the cognizant ISEA per paragraph 5.g.

(1) In those cases where the ISEA reviews contracts, purchase orders, etc., after-the-fact, and notes deficiencies in the areas of quality assurance or technical requirements/information, the ISEA will so advise SPCC including a statement concerning the essentiality or criticality of the change and an estimate of cost impact resulting from the change, if available. SPCC shall then take necessary action to modify the contract or other applicable authorization.

j. Using the quality assurance and technical guidance, information, requirements, etc., furnished by the cognizant ISEA without modification. If changes are required by SPCC, the changes shall be forwarded to the cognizant ISEA for approval/disapproval prior to SPCC action.

NOTE: SPCC shall ensure the document baseline (including document revision letter(s) and approved, but as yet unincorporated, notices of revisions/changes affecting those documents) is included in the contract precisely as specified by the ISEA.

k. Forwarding a list (quarterly) of all items in the PDF for automated buying to cognizant ISEA. (See paragraph 4.k.)

l. Responding to ISEA requests to be a participant on pre-award, surveys, post-award conferences, and pre-bid conferences. (See paragraph 4.d.)

m. Furnish copy of contractor drawing(s) when requested by ISEA.

n. Consolidate procurement for identical items, if possible.

6. Procedures.

6.1 Support Assistance.

6.1.1 SPCC Requests. SPCC shall initiate a request for support assistance as soon as needs are planned, anticipated or received. See paragraph 5.c for exceptions, when ISEA support assistance is not requested to develop technical information. SPCC shall initiate urgent requests by telephone (by designated personnel), which shall be formalized by subsequent communications. Requests shall contain the following data per reference (d).

a. Item nomenclature, part or drawing number, and National Stock Number and Allowance Parts List (APL) number.

b. Assembly drawing number and revision letter, when available.

c. Quantity to be procured.

d. Contractor(s) under consideration (if known at time of request).

e. Equipment Application.

f. Date of last procurement and contractor procured from, and furnishing specification drawing number and revision letter if other than (b) above.

g. Specific information required.

h. Date/time response required.

i. End item user(s), of other than U.S. Navy.

j. On Security Assistance Program/Foreign Military Sales SPCC shall provide the milstrip numbers and chargeable case designator/number.

6.1.2 ISEA Response. Upon receipt of request for assistance, the ISEA shall perform a review of the information provided and forward the required quality assurance and technical data for ICP usage.

6.1.2.1 ISEA Response Time. The ISEA shall provide a timely response to all requests. Normally, routine requests shall be answered within 30 calendar days from receipt, or by the date/time required by SPCC. Priority requests shall be answered within seven (7) calendar days; extremely urgent requests shall be answered within one (1) calendar day. It should be noted that if the ISEA(s) cannot supply the requested quality assurance or technical requirements within the above time frames, the ISEA(s) shall inform SPCC of the reason and the projected response date.

6.2 Quality Assurance and Technical Data Requirements. The ISEA, in addition to the specific information requested by SPCC, shall review and provide requirements where applicable, in the following areas. (See paragraph 4.a.)

a. Technical documentation to be used, including the proper revision letter, including any approved, but as yet, unincorporated notice of revisions/changes. (See paragrpah 5.j.)

b. Adequacy of the technical data package for competitive/ advertised procurement. (See paragraph 4.a.)

c. Supplementary Quality Assurance Requirements.

(1) Contract Quality Requirements

(a) Contractor's quality program or inspection system requirements, (MIL-Q-9858A or MIL-I-45208A). Note: ASPR 14-101 lists the five basic categories of contract coverage for

(b) First article; pre-production inspection and periodic production tests.

1 Quantity of samples required

2 Place of performance

3 Description of inspection and test requirements

4 Approval authority

5 Government participation or witnessing

(c) Other special quality requirements

1 Quality assurance environmental tests

2 Applicable classification of characteristics

3 Sampling inspection plan (single, double, or multiple); inspection level (I, II, or III); acceptable quality level; and severity of inspection (normal, tightened, or reduced).

d. Waiver, deviation, and engineering change approval authority. (See paragraph 4.f.)

e. Mandatory government inspection instructions. (See NAVSEAINST 4855.13.)

f. Requirements for vendor survey prior to contract award.

g. Validation will/will not be required on capability of overhaul/repair activities/DOPs.

h. Government Furinshed Material (GFM).

i. Reliability and Maintainability Requirements. (Must not be left blank.)

6.3 Contact Points.

a. By separate correspondence, the ISEA and SPCC shall establish contact points by name, activity code, functional responsibility, and telephone extensions. The designated representatives shall have authority to initiate requests, and to respond to requests by telephone (all such requests and responses to be limited to the guidelines of this document). Resulting quality assurance and technical decisions will be confirmed in writing to SPCC by the ISEA.

b. The NAVSEA point of contact at SPCC for quality assurance and technical problems attendant to this agreement, is the NAVSEA Quality Assurance and Engineering Liaison Representative, SEA-06G25Q, SPCC.

6.4 Quality and Technical Problem Investigations.

6.4.1 Problem Investigation. Either SPCC or ISEA may initiate quality or technical problem investigation when feedback indicates such problems may exist. SPCC requests for problem investigation may be initiated by routine correspondence or by telecon.

6.4.1.1 The ISEA shall be responsible for conducting investigation, and for subsequent coordination with SPCC on problem identification and status.

6.4.1.2 Contact with the contractor will only be made under conditions set forth in SPCC Clause F-15 or when authorized by the PCO and then only for information purposes. Extreme caution must be exercised when making direct contact with contractors to avoid "Constructive Change Orders". Contract with the cognizant CAO may be made by the ISEA for investigation purposes; however, all contractual direction to the CAO shall be made by the PCO. (See reference (f) for SECNAV requirements regarding correspondence and oral communications with contractors, especially the required "Statement of Limitation of Authority".) (Also, see NAVMAT Procurement Newsletter, NAVMAT P-2182 of May-June 1969 for an explanation of "Constructive Change Orders".)

6.5 Security Assistance Program/Foreign Military Sales Reimbursement.

6.5.1 Price and Availability (P&A) Estimates.

a. ISEA quality assurance and engineering effort for the preparation of Security Assistance Program/Foreign Military Sales (SAP/FMS) P&A estimates will be charged to SAP/FMS administrative funds.

b. SAP/FMS administrative funds will be provided to the ISEAs by SEA-04G.

c. ISEAs will submit level-of-effort fiscal year budget estimates to SEA-04G for the preparation of SAP/FMS P&A estimates.

6.5.2 Executed SAP/FMS Cases.

a. All quality assurance and engineering effort on executed SAP/FMS cases, i.e., subsequent to the preparation of P&A estimates, will be charged directly to the specific SAP/FMS case designator/number. (See CNM ltr PM-21C:APC of 13 Feb 75 [NOTAL], subject: FMS [Foreign Military Sales Administration].)

b. Recuring ISEA Quality assurance and engineering support costs related to SPCC contracts from which SAP/FMS deliveries are made will be charged directly to the specific SAP/FMS case designator/number. These include all quality assurance and engineering effort attendant to this agreement; production test; qualification and acceptance inspection; test documents; certification of test systems; certification of test results; adequacy of technical documentation; producibility; configuration management, i.e., waivers, deviations, ECPs; destruction and evaluation; government provided transporation; packing, crating and handling costs incurred by ISEA; and recurring costs of technical documentation.

c. ISEA quality assurance and engineering costs incurred per paragraphs 6.5.2a and b above will be submitted on Standard Form 1080 to the Navy International Logistics Control Office (NAVILCO), Bayonne, NJ 07002, Attn: Code 10. (A NAVSEA-NAVSUP procedure for SAP/FMS reimbursement is being prepared by SEA-04G and SUP-033.)

7. Background. Armed Services Procurement Regulations require the activity responsible for technical requirements to coordinate with the purchasing activity in prescribing the contractual quality requirements necessary to assure the integrity of the products ordered. On contracts issued by NAVSEA the contact between technical and contracting authorities is simplified by organizational proximity and coordination is routinely accomplished internally. However, when the various other activities perform the procurement functions, technical coordination with the contracting authority becomes increasingly difficult, especially where contractual quality and technical requirements are to be furnished by NAVSEA cognizant ISEAs spread throughout the country. Because these other procuring activities often lack specialized prpduct knowledge, they must rely on the ISEAs technical and quality requirements necessary to formalize contractual requirements. Inadequate technical and quality requirements result in the issuance of a contract that ultimately contribute to the receiving of unsatisfactory material. Therefore, the NAVSEA ISEA must determine the technical and quality requirement for all material to be procured and must, prior to procurement action, furnish this information to SPCC for inclusion in applicable contract. The end result of providing timely technical and quality requirements to SPCC will be a contract containing requirements that are tailored to the individual purchase and which will best assure product conformance and fleet satisifaction.

8. Discussion of Present Functional System. The functional system for implementing the above paragraph 7 requirements can best be described from the Naval Ship Weapon Systems Engineering Station (NSWSES) Interface 76:

". . .at 0630 west coast time on a bright clear morning, a QA Specialist on flexitime is just entering the working area. A phone rings and is answered. . .east coast calling, 0930 there, a form is inserted, a button pressed and a communicating typewriter starts to automatically chatter out a request for action.

A large buy is about to be made by SPCC, the inventory control point; QA and technical direction is required to assure that the planned procurement contains the complete and proper technical data and the optimum quality requirements. Thus starts a process that will ultimately involve:

0 One or more project engineers or technicians who confirm fleet configurations needs, who verify the technical content of the drawings, specifications, and test procedures to be used, including their adquacy for competitive procurement; who advise on known fleet problems; and

0 Technical Data Specialists who verify the completeness and overall configurations of the technical data noting any obsolete mil-specs; and

0 Quality Assurance Specialists who determine the optimum contractual quality requirements, such as the proper Armed Services Procurement Regulations (ASPR) clause to be used; the correct waiver and deviation procedures to be referenced; whether first article requirements are appropriate and if so, how many units are to be evaluated, when and by whom, what the conditions of acceptance will be, including use of Navy laboratories to conduct the tests.

All of the decisions/directions are played back over the same typewriter directly to the purchasing activity. Microfilm copies of all appropriate technical data are simultaneously furnished by separate transmittal.

An interesting fallout of the engineer's effort to confirm Fleet configuration needs is the concellation of several planned contracts that would have purchased obsolete material. Needless expenditures in excess of an estimated $1,000,000 have been avoided due to the engineer's intimate knowledge of the weapon system actual configuration. Likewise, the discovery of major quality problems during First Article Inspections has prevented the contamination of existing supply stock with defective items. When the potential cost of transportation, handling, and storage, and the inevitable cost of purging supply is considered it becomes apparent that such effort is well worthwhile.

The culmination of the combined efforts of NSWSES engineers, the data and quality specialists is a procurement package that will best result in the acquisition of quality items. This interaction between purchasing and engineering activities is governed by the NAVSUP-NAVSEA Quality Assurance and Technical Support Agreement which recognizes the mutual responsibilities of the ICP and engineering support agents such as NSWSES to effectively and economically support in-service NAVSEA ships weapon systems, equipments and matterial. .[concurently]. . .a QA specialist ponders over a QALI (Quality Assurance Letter of Instruction.) QALIs are directed to the government QA Representatives (QAR) at the source of manufacture and the contents must be just right. Specific product characteristics are selected from the technical data package based on item complexity, critical interfaces, suppliers, qualtiy history, and known in-service problems. Once imposed a QALI becomes a mandatory requirement upon the QAR for the life of the contract unless modified or rescinded by the originator. A well-written QALI, not only describes the specific product characteristics to be verified, but also provides the QAR with some previous and perhaps otherwise unavailable product history, e.g., intial qualification problem areas or operational quality deficiencies. In addtion, a point of contact and lines of communication are established between the contract administration service and the technical activity. Follow-on contact and further liaison by the orginating quality specialist assures QAR reciept and understanding of the requirements. . . ."

9. General.

a. The complexity, high cost, and varied missions of current NAVSEA cognizant weapons/support systems and their related equipments dictate a completely coordinated effort between NAVSEA and NAVSUP to insure a high level of operational quality in naval material.

b. The responsibility for engineering of NAVSEA ships, weapon systems, and equipments is vested in the Commander, Naval Sea Systems Command. Engineering authority is delegated to Command Directorates and program managers, with selected engineering functions redelegated to designated field activities. NAVSEA Program, Acquisition, and Project managers depend on these various activities to provide the engineering agent support necessary to initially achieve program success and to assure continued achievement of all program goals, including the all important objective of obtaining optimum product quality in the ships and systems introduced into the fleet.

c. NAVSEA In-Service Engineering Agents, by virtue of their being involved in the various disciplines of engineering, logistics, tests and evaluation, reliability, and quality assurance during the early program phase of design and development and a continuation of that involvement through production, installation and checkout, in-service operation, and maintenance, can influence the evolution of product quality more so than any other support effort. It is lamented fact that quality, reliability and maintainability inherent in the basic design usually degrades as a result of variations, deviations, waivers, and part substitutions from the standard in manufacturing, inspection, installation, material handling, packaging, maintenance, storage, transportation, and operation. It is, therefore, incumbent upon all NAVSEA ISEAs to conscientiously implement the proven policies, procedures, and requirements of existing NAVSEA instructions for engineering, reliability, maintainability, and quality assurance. It is to that end that this support agreement is mainly addressed, so that SPCC can fulfill its all important mission: Quality parts; on time; reasonable cost.

10. Scope. The intent of this agreement is to define the respective quality assurance and technical support actions and responsibilities of NAVSEA, the cognizant NAVSEA ISEAs, and SPCC to materially support the U.S. Navy Fleet, shore activities, and the Security Assistance Program with high quality spare parts. This agreement is for all NAVSEA cognizant material assigned to SPCC for supply support, except material under the cognizance of NAVSEA 08. Actions, guidance, and directions in this agreement are in accordance with NAVMAT (Naval Material Command), NAVSUP, and NAVSEA policies, directives, and instructions. This agreement entails no explicit or implicit reallocation of authority to or from NAVSEA, NAVSUP, NAVSEA ISEAs, or SPCC.

11. Objective. The objectives of this agreement are to:

a. Economically assure quality replacement parts are systematically supplied to the Fleet by SPCC for NAVSEA cognizant in-service ships, weapon systems, equipments and material.

b. Define the dependent and interdependent NAVSEA, NAVSEA In-Service Engineering Agents (ISEAs) and SPCC quality assurance and technical support authority and responsibilities.

c. Provide the procedures and criteria for the timely requesting and/or providing:

(1) Complete procurement technical data packages.

(2) Update of SPCC's technical/purchase data file.

(3) Automatic procurement by SPCC.

(4) Quality assurance and technical support attendant to SPCC procurement and management of replacement spare parts.

(5) Investigation and positive corrective action on quality and technical problems.

d. Service as briefing document.

12. Action.

a. The ISEAs listed in references (a) and (b) are the technical activities to whom the Commander, Naval Sea Systems Command has delegated the authority for all the quality assurance and technical requirements referred to in ASPR 14-201. These ISEAs are responsible for all the quality assurance and technical duties specifically defined and contained herein, for all cognizant NAVSEA material managed by SPCC, except material under the cognizance of NAVSEA 08. (See paragraph 13 for ISEAs specifically required to support this agreement.)

b. The funding required to support the duties specifically defined and contained herein is the responsibility of the cognizant NAVSEA sponsor(s). The necessary funding shall be budgeted and forwarded to the cognizant ISEA by the NAVSEA sponsors/managers. Administration funds to support the preparation of Price and Availability (P&A) estimates for the Security Assistance Program/Foreign Military Sales will be provided by SEA-04G. (See paragraph 6.5.)

c. The requirements contained herein shall be included or referenced in NAVSEA or other task statements; however, the absence of such reference in task statements shall not be the sole grounds for non-compliance. In such cases, further clarification must be obtained from the NAVSEA Deputy Commander, Weapons Systems and Engineering Directorate (SEA 06).

d. To assure the continuity of this agreement, this agreement is required reading by all Commanding Officers, supervisors, and personnel effecting or implementing the requirements of this agreement.

e. If there are exceptions to specific systems or equipments listed in the references (a) and (b); or, if the support actions in paragraph 4 have been retained by NAVSEA or delegated by NAVSEA to another activity or activities, the cognizant NAVSEA technical manager or program manager shall update references (a) and (b) and/or notify SPCC in writing which activity or activities is/are responsible for the support actions in paragraph 4. Specifically:

(1) On SPCC initiated contracts, purchase orders, work requests, project orders, etc., where the NAVSEA ISEA listed in references (a) and (b) are not responsible for all the quality assurance and technical support functions contained in this agreement. In these cases the cognizant NAVSEA technical manager or program manager shall notify SPCC which activity(ies) is responsible for specific quality assurance and technical functions.

(2) On NAVSEA initiated procurement, requests, requisitions, contracts, or project orders that are executed and administered by SPCC. In these cases the NAVSEA technical manager or program manager, who initiated the procurement requests, requisition or project order is responsible for supplying the complete quality assurance and technical requirements and support in accordance with current and applicable NAVSEA instructions. All SPCC questions or request regarding NAVSEA initiated procurement requests, project orders, etc., and resulting contracts shall be directed to the NAVSEA technical code or program manager who initiated the procurement requests, etc., and/or to the activity(ies) so specified in the NAVSEA procurement requests as being responsible for the specific function(s).

13. Cognizant NAVSEA ISEAs. The cognizant NAVSEA ISEAs specifically required to support this agreement and their general cognizant items are:

a. Naval Ship Engineering Center (NAVSEC)
Department of the Navy
Washington, DC 20362
Commander, J.W. Lisanby, RADM, USN

All ship hull, mechanical, and electrical equipment not specifically redelegated to NAVSECNORDIV or NAVSECPHILADIV. (See reference (a) and the current NAVSEC, Organization and Functional Index for specific items.)

b. Naval Ship Engineering Center, Norfolk Division
(NAVSECNORDIV)
Naval Station, Norfolk, Virginia 23511
OIC H.C. Crane, CAPT, USN

Surveillance radar (except fire control), sonar, Naval Tactical Data Systems, intra communications, navigational, and automatic test equipment not assigned by reference (b). (See NAVSECNORDIV Equipment and Responsibility Assignment from NAVSEA and NAVSEC, Report 73-5006 of March 1976.)

c. Naval Ship Engineering Center, Philadelphia Division
(NAVSECPHILADIV)
Philadelphia, Pennsylvania 19112
OIC W.A. Lent, CAPT, USN

Steam generators, refractors, deaerating feed tanks, combustion devices, combustion control system and associated boiler room auxiliaries, accessories, and components; main propulsion turbines, internal combustion engines, gas turbine engines, reduction gears, turbo generators, and associated engine room hull machinery, accessories and components; test instruments, instrumentation methods, fuel, lubricants; and submarine antenna systems and mast mounted sonar systems. (See NAVSECPHILADIV ltr 6711C:JC:mca, Ser 146, of 2 Aug 76, for List of Equipment Assigned to NAVSECHPHILADIV.)

d. Naval Ship Weapon Systems Engineering Station (NSWSES)
Port Hueneme, CA 93043
CO J.D. Elliott, CAPT, USN

TARTAR, TERRIER TALOS, and AEGIS Missiles and related Systems and Hardware, HARPOON and Point Defense except missiles; Underway Replenishment System; Close-in-Weapon System; MK-86, MK-87, MK-92 and MK-94 Gun Fire Control Systems.

e. Naval Mine Engineering Facility (NMEF)
Yorktown, Virginia 23691
OIC P.F. Bauer, Jr. CDR, USN

All convential Mines and Depth Charges.

f. Naval Ammunition Production Engineering Center (NAPEC)
Crane, Indiana 47522
OIC J.W. Allen, LCDR, USN

All Navy Convential Ammunition except Air Ordnance.

g. Naval Weapons Support Center (NSWC)
Crane, Indiana 47522
CO J.E. Edmundson, CAPT, USN

.50 Caliber and down, weapons and related mounts; all Navy small arms; field mortars, recoilless rifles; night vision devices; and flame weapons systems.

h. Gun Systems Engineering Center (GSEC)
Louisville, Kentucky 40214
CO H.M. DeJarnette

All Navy Surface Guns and Gun Mounts, .60 caliber through 16"; all Navy Surface Gun Fire Control Systems, except MK-86, MK-87, MK-92 and MK-94 (NSWSES); all Navy Howitzer, Mortars, Surface Rocket Launchers; and all aobve related Ancilliary Equipment.

i. Naval Underwater Systems Center (NUSC)
Newport, Rhode Island
CO W.L. Bohannan, CAPT, USN

All Navy Torpedoes, except MK-86 (NUC); all Torpedo Fire Control System, including MK-46; SUBROC; and ASROC Launchers

j. Naval Ocean Systems Center (NOSC)
San Diego, California 92152
CO R.R. Gavazzi, CAPT, USN

MK-46 Torpedo and related equipment except MK-46 Fire Control System (NUSC); ASROC Missile, less Payload (McAlester); and ASROC Launcher (NUSC).

k. Naval Weapons Station, Earle, Naval Weapons Handling Laboratory, Earle (NWHL/Earle)
Colts Neck, New Jersey 07722
CO J.T. Heigl, CAPT, USN

All packaging, handling, storage, transportation equipment and requirements for all NAVSEASYSCOM Weapons and Material.

l. Naval Ammunition Depot, McAlester (NAD/McAlester)
McAlester, OK 74501
CO D.H. Parker, COL, USA

All Navy Ordnance Nuclear Weapons and related equipment.

m. Naval Explosive Ordnance Disposal Facility (NAVEODFAC)
Indian Head, Maryland 20640
CO W.S. Cadow, CDR, USN

All Naval Explosive Ordnance Disposal Tools, Equipment and related items.

14. Change or Revisions. This agreement shall be reviewed six (6) months after implementation by NAVSEA and NAVSUP for any additions, deletions, or clarification of respective support functions. All suggested additions, deletions or clarifications shall be forwarded to NAVSEA (SEA-06G25).

APPENDIX E [26]

CLARIFICATION OF THE TERM "END ITEMS"

An end item has been defined as "a final combination of end products, component parts, and/or materials which is ready for its intended use, e.g., ship, tank, mobile machine shop, aircraft" [30] However, end items are also capable of independent use and may be more simple in construction than the examples given above. When considering the more basic distinction between items of supply, namely principal and secondary items, this fact is of special significance.

Principal items are specifically designated by CNO and are characterized by the following management and material considerations:

1. Requirements determined on a planned basis by the cognizant SYSCOM;

2. Requirements based solely on planned end-use allowances and planned reserve/retention requirements;

3. Separate budget formulations through Material Planning Studies and Principal Item Stratifications;

4. Procurements financed exclusively with appropriated/investment funds;

5. Attrition based solely on major total/destruction, intended destructive use, or planned retirement;

6. Issues to end-use strictly limited to SYSCOM-established allowances or special SYSCOM-approved authorizations.

Secondary items are those items not classified as principal items and exhibit the following characteristics:

1. Requirements determined by the cognizant ICP;

2. Requirements based either on estimated/observed demands or non-demand based insurance levels;

3. Budget formulations based upon standard levels-setting techniques and standard Secondary Item Stratification projections;

4. Procurements financed either with investment funds or stock funds, as governed by such factors as unit price and recoverability;

5. Attrition based primarily on normal in-service wear-out or consumption;

6. Issues to end-use subject to limitation on the basis of established allowances but more typically limited only on the basis of quantitative validations.

It is obvious that an end item could be a secondary item. Therefore, it follows that end-items can be subject to widely varying management and, in actuality, have less in common with each other as a group than they have with other items which are similarly classified as either principal or secondary items [31].

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